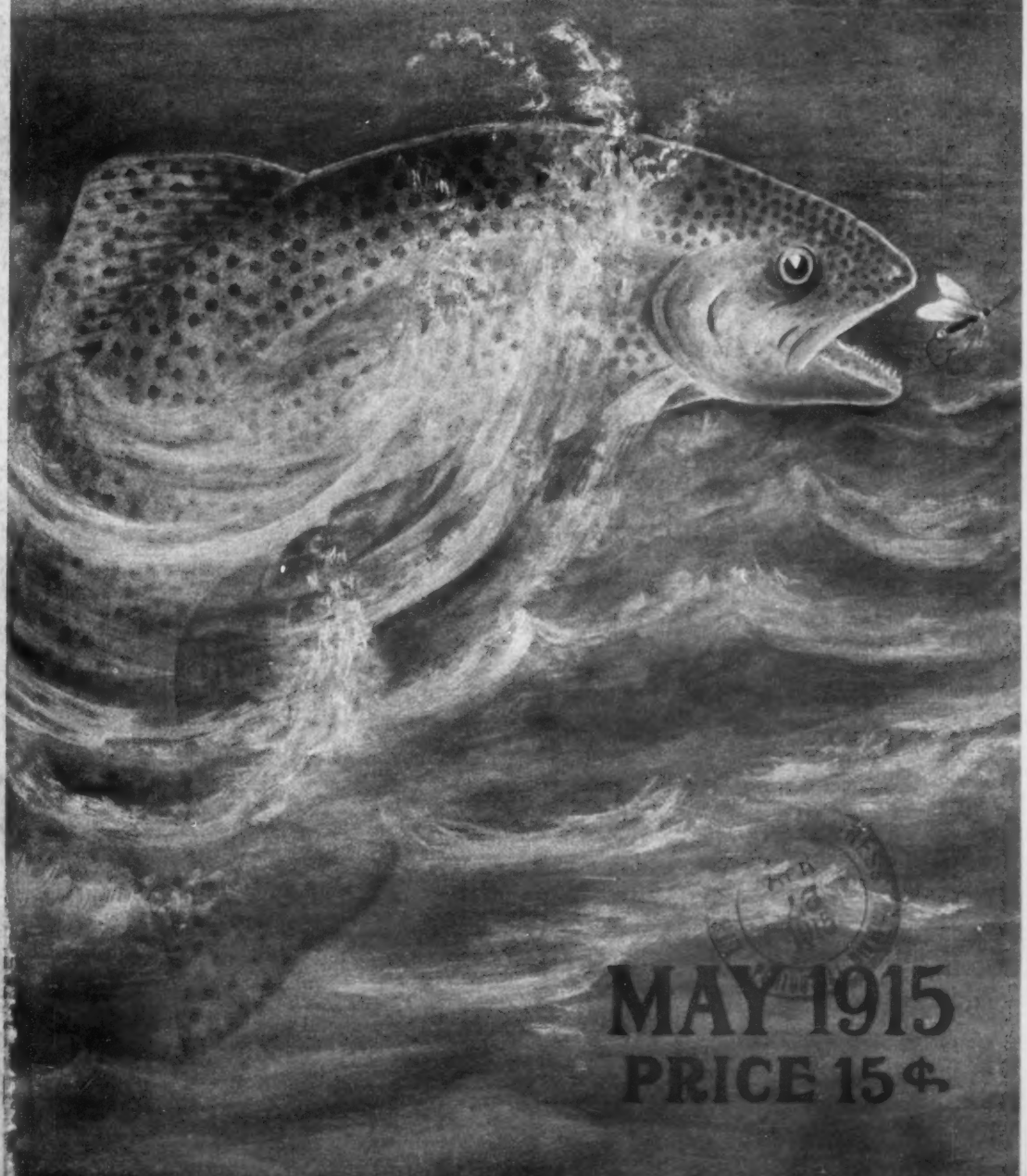
OUTDOOR LIFE



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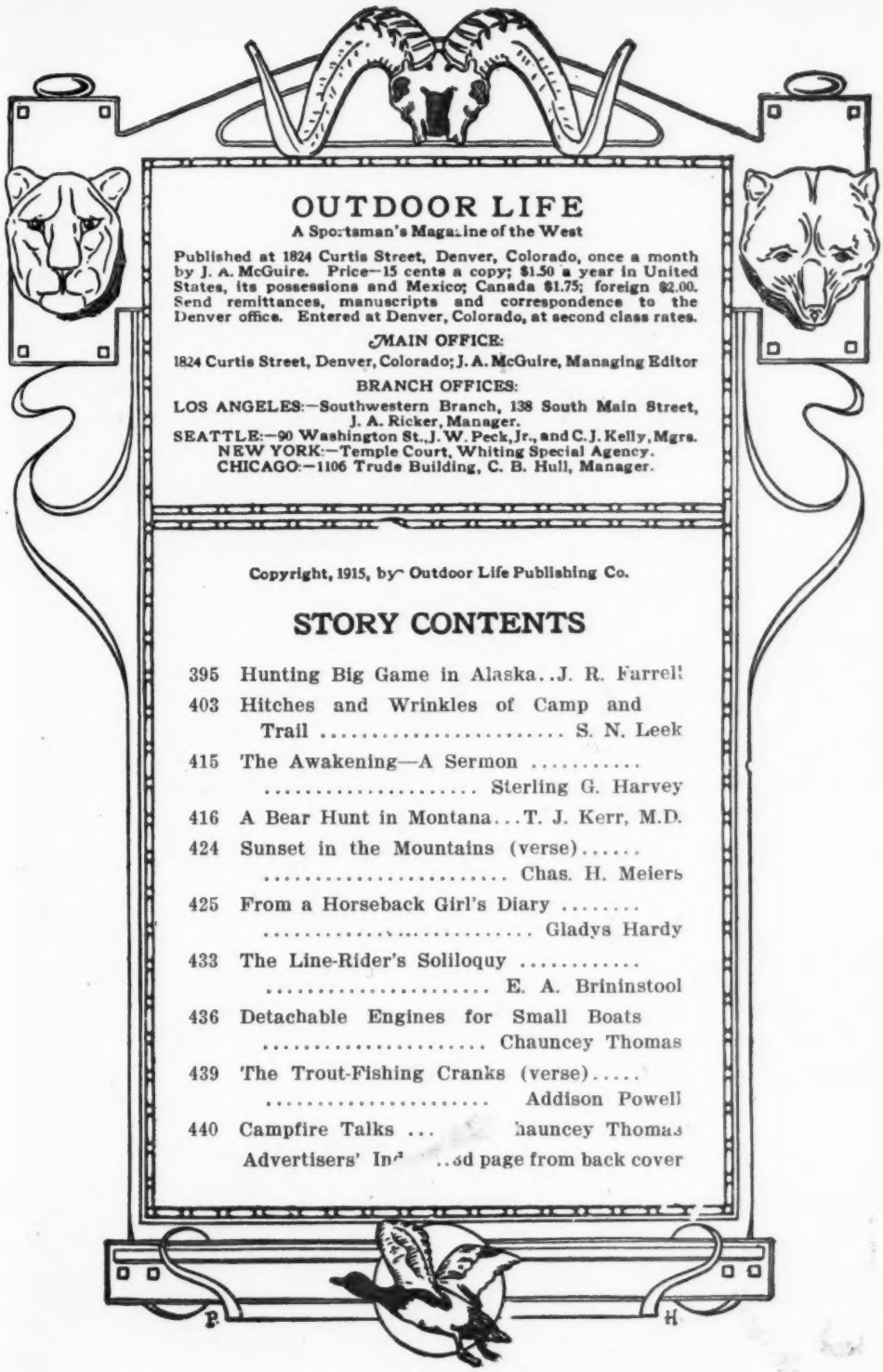

OUTDOOR LIFE

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THE AUTHOR AND HIS LARGEST SHEEP HEAD. IT MEASURED 15¼ IN. AT BASE, 41 IN. AROUND FRONT CURVE, AND SPREAD 26 IN.

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OUTDOOR LIFE

Vol. XXXV. MAY, 1915 Number 5

HUNTING BIG GAME IN ALASKA

The story of a successful hunting trip taken last fall on Knik Arm, Kenai Peninsula, on which a liberal bag of sheep, bears, goats, grouse, ptarmigan and ducks was secured.

J. R. FARRELL

On Sept. 12, 1914, while sitting in the lobby of the Pioneer hotel, at Knik, Alaska, my friend, Howard Andrews, approached me with a broad smile on his face like most red bloods get at that time of year, and suggested a hunting trip up the Knik River. As I had already had the fever for about three days, and was only waiting for someone to give the alarm, I readily assented. The Foster boys, formerly of Calahan, Calif., were in town, so I suggested to Howard that we try to "ring" them into our party.

"Sure thing," says Howard, "let's go over to their cabin and talk it over."

We found both boys at home, and we at once made known our wants. They both spoke up at once with, "It's a go; just what we were looking for."

We planned to get away on the 9 p. m. tide, as one can only go or come with the tide in Cook's Inlet, with a rowboat. It was then about 11 a. m., so we hustled around and hired a couple of 18-foot dories, and got our camp outfit together, such as blankets, pack-sacks, guns, cooking necessities and grub for a thirty-five-day trip.

Our arsenal consisted of a .30 government Winchester, belonging to Howard; a .32 Special Winchester, to Lee Foster; a .30 Sauer Mauser rifle and a .22 Smith & Wesson target pistol belonging to Mack Foster; my guns are a .35 Remington automatic and a 12-gauge pump gun.

Two days later found us lining up the Knik River, as water was too swift to row. The stream is very wide and shallow, with plenty of quicksand in the bottom, which was the cause of our getting many a good cold plunge by sinking down over our hip boots.

At 6 p. m. we made camp, thoroughly tired out from our hard day's work coming up the river. We were up before light next morning ready to pull on up the river, but the mountains in back of us looked so good for sheep that we decided to remain there for a while.

There is a small stream that divides the rough range or craggy peaks; How-

SCANNING THE MOUNTAIN FOR SHEEP.

ard and Mack went up on the right of this, while Lee and I climbed up on the other side. We discovered an old trail leading up to the point, by which we reached alder line at 12 noon. Looking ahead of us on the Tundra Hills, we saw no sheep, but plenty of fresh bear sign. At 2 p. m. we reached the slide rock where the sheep would most likely be found, as at this time of the year they are on the highest peaks. At 4 p. m. we found goat sign but no sheep.

As it would take us till after dark to reach camp we decided to go to the bottom of the cañon and find wood and camp for the night. It began to rain before we got off the mountains. Alders and grass were so wet that it was like wading through a lake. Just at dark we got to timber, wet as drowned rats, nothing dry but the inside of our match boxes. We gathered a few dead limbs and took a small piece of candle, and soon had a good fire going, also plenty of wood for the night. We had just about got dry when the rain began to find its way through the leaves that were left on the cottonwoods. As fast as we got one side dry the other was wet, so we did no sleeping that night. About 4 a. m. the rain ceased; we roasted a couple of ptarmigan that we had killed the day before, and were soon on our way up the mountain after the goats we located the day before. When we were about half way to the top a heavy fog settled and we could not see more than fifty yards ahead, so we went back to our camp, which we reached at 3 p. m.

Upon arriving we found a note left by Howard and Mack, telling us they had seen three bears the day before, but did not get a shot. They had taken one boat and gone on up the river. After eating a good meal we decided to follow them the next day.

On the 17th we reached Hunter Creek, eight miles below the Knik Glacier. This great body of ice is twenty miles in length and from two to five miles wide, and is a great rendezvous for goats. Here we found Mack and Howard camped. This we made our permanent camp. Mack had picked a pail of low-brush cranberries for sauce, and Howard brought in a fine mess of trout, upon which we made out a fine dinner.

We were up at 4 a. m. next morning and began making preparations for our day's hunt, by baking up a lot of bannocks or water-whelps, as Mack called them. At 9 a. m. we left camp, taking bread enough to last us about three days.

On reaching the hills we separated, Lee and Mack going up on one side of the creek and Howard and I on the other. We saw nothing but ptarmigan. The others had better luck, Lee spotting a large black bear feeding above timber-line on tundra berries, about 200 yards away. The wind was in his favor so he tried to get nearer to make a sure shot. After getting about fifty yards closer he took careful aim and fired. The first shot went a little high, but knocked Mr. Bruin down; second shot went wild, while the third caught him a raking forward shot, entering the left flank and lodging in the shoulder, dropping him helpless, but not dead.

Mack found fresh goat signs, but no goats.

The second day I spotted two large rams lying down about fifty yards apart, high up among the crag rocks. After considering the climb I would have to make, I decided it would be impossible to reach them before dark, as I would have to go one and one-half miles around them over very bad ground. Nevertheless, I looked them over very carefully and saw they had extra large horns, so I thought I would take a chance on them. It was just 12 noon, so I took out my lunch, which consisted of two bars of chocolate and a water-whelp. After eating and taking a cold drink of snow water I started to make the climb. I reached the top of the mountain above them at 3 p. m. and began to come down on them, and thirty minutes later found me within about 200 yards of them, with a good open shot at one; but the other I could not see. In a second more I saw the one which was hidden from view raise to his feet. He was looking in my direction, as if he had discovered something wrong in his neighborhood. I took careful aim at his shoulder and fired, but shot low and scored a clean miss. He started to run. The next shot caught him about the knee joint of the hind leg, breaking it. He dropped down as if dead and I turned to shoot at his companion. He was running at full speed just about 175 yards from me, trying to reach higher ground.

I shot, the ball striking just behind him; the next shot caught him in the front leg between the knee and the foot. He dropped forward on both knees, but raised again and started on three legs. The third shot caught him well back in the ribs and passed through him, making an ugly wound on the other side, killing him instantly.

After looking him over, I turned to go over and examine the other one that I thought I had killed, but saw him, to my surprise, standing up about thirty yards from where I had shot him. I walked up to within 100 yards of him, and he attempted to get away on three legs, but I pulled up and gave him one just back of the shoulder. He started to fall and roll, and at last dropped off a cliff that I think must have been more than 150 feet. After putting in about twenty minutes climbing down to him, I found he had broken both horns in the fall and ruined them for mounting. They measured 15½ inches at base and were as large as any I had ever seen. The other head measured 15¼ inches and was perfect in every respect. They were 41 inches around front curve, with a spread of 26 inches.

Now came the task of skinning out the head of the one for mounting and the meat of the other one. I started for camp at 5 p. m. with my 15¼-inch

SHOWING SNOW ON MOUNTAINS, WHICH MADE IT VERY DIFFICULT TO SEE THE WHITE SHEEP.

PTARMIGAN PHOTOGRAPHED AT EIGHT FEET.

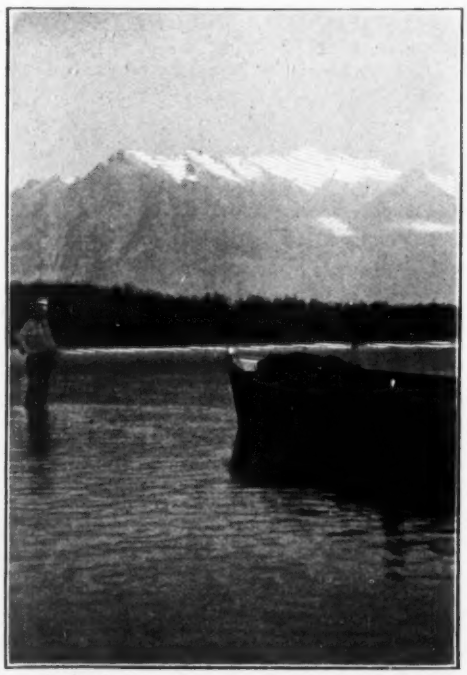
sheep head and cape and a quarter of meat. It was after dark when I reached timber, so I made a camp under a large spruce tree and roasted a piece of meat. After eating, I laid down on my spruce bough bed, thinking over my day's success, soon dropping to sleep. About 2 a. m. I awoke to find myself getting quite wet from snow and rain, so I built up my fire and sat up the rest of the night.

As soon as daylight came I was on my way to camp, which I reached about 4 p. m., tired and hungry. No one was in camp then, but about dark Mack and Howard came in with three grouse. They told of hard luck, seeing no large game. Lee failed to show up at all. Mack and Howard looked over my trophy and pronounced it an excellent head.

The next day was the 21st, and we three left camp at 8 a. m. to bring in the sheep meat. It took two days to make the round trip. We saw two black bears, but did not shoot, as we wanted to try for sheep. When we returned to camp we found Lee back, without any success. He had seen sheep, but could not get within shooting range of them.

On the 23rd we awoke to find it raining and clouds hanging low on the mountains. This lasted for three days, and we didn't get far from camp, only to hunt a few chickens nearby. Howard picked some high-bush cranberries, making some delicious jell which went fine with our fresh meat.

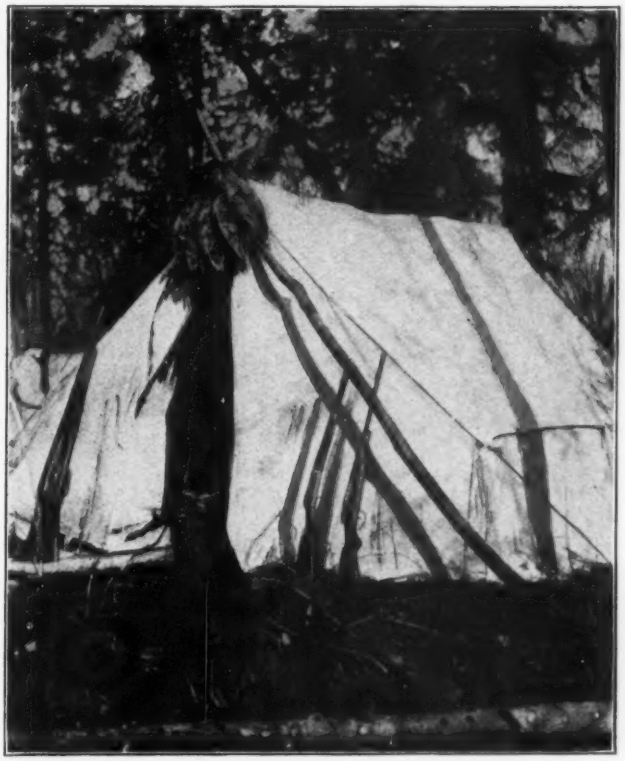
We started out bright and early on the 26th, for the clouds had lifted and the high peaks were all covered with fresh snow. Mack and Lee went in one direction, Howard and I the opposite. When we were about half way up the mountain we came to a patch of blueberries. As we were well out of breath from our climb, we sat down to rest and eat berries. While sitting here I saw the brush move, about twenty steps away. I said nothing, but motioned to Howard. We



LEE AND ONE OF OUR BOATS. MOUNTAINS, WHERE WE HUNTED, IN BACKGROUND.

watched for five minutes, and I saw a small bear passing through a little opening about 100 yards away. I threw my .35 to my shoulder and took a snap shot, but as I just saw the top of his back, I missed. As he disappeared into the alders, I fired again, with the same result.

We climbed out high on the divide and looking back saw a bear feeding about a quarter of a mile from where we had started, but he was close to cover, so we did not try for him. Crossing the divide, we descended about half way, where we found fresh sheep tracks. We put in about thirty minutes after them, but on looking across the cañon I saw an old bear and two cubs feeding above alder line. I whistled to Howard, who was only a short distance away. We at once started for them. It was 5 p. m. before we got within shooting distance. The old bear scented us and they made for cover; I fired two shots as they disappeared, but no meat. In about three minutes the old bear broke cover at about 350 yards. We both opened fire and shot about eight times, but failed to connect; we watched the brush until dark, thinking the cubs would come out, but they did not. It started to rain and we had about two miles to go to timber through alder brush and devil clubs. After about forty minutes we decided it would be impossible to make it, so we built a fire out of green alders and sat up all night, cutting brush with our hunting knives. The wind blew and it rained and snowed all night. We needed no one to tell us to leave as soon as light enough to start for camp. We reached there about 11 a. m., tired, hungry, sleepy and wet, just in time for a fine hot meal of bear steak, roast mutton, ptarmigans and high-bush cranberry sauce that Mack and Lee had ready. After putting a good portion of this under our belts we sat down to exchange stories of the day before. Mack had made a record shot on a goat about 500 yards away, with an umbrella Spitzer, 150-grain. This was the only shot there was to be proud of; he had only one shot and made a clean kill, almost out of range of the .32 or .35. Lee had got into a mixup with three bears and bagged all of them with five shots, being within fifty yards when he opened on them. There was no brush to interfere, so he took a neck shot on the first one, dropping it in its tracks; the second shot found its way into the heart of bear number two, and he fell paralyzed, but not dead. He now turned on the third bear, which was at



THE MAIN CAMP SHOWING SOME OF THE DUCKS KILLED.

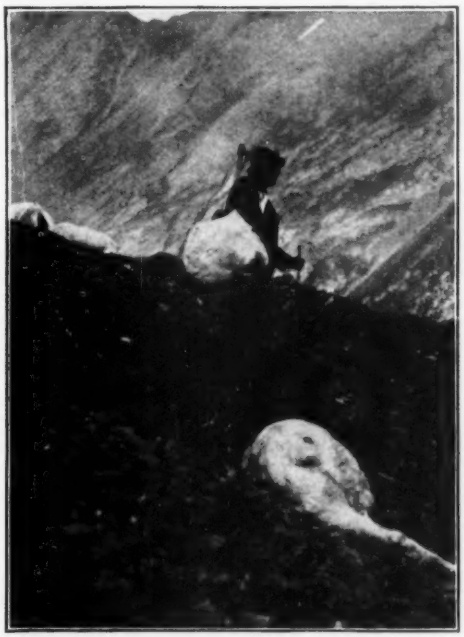
OUR LARGEST SHEEP AND GOAT HEADS. THE AUTHOR AT RIGHT.

least 100 yards away. The first shot got him in the soft part of the ham, changing his course; the next broke left front shoulder and slowed him down, and the third ball caught him through the liver, dropping him. After complimenting him on his marksmanship, Howard lay down to take a nap, while Lee and Mack picked blueberries.

Next day we started out at 6 a. m., and about a quarter mile from camp we separated. At 8 a. m. I saw a bear feeding about 250 yards away. After I had advanced about twenty-five steps he stopped and sniffed the air. Knowing that he had winded me, and would soon make for the alders, which were about seventy-five yards away, I raised the peep on my rifle one notch, took good aim at his shoulder and fired. I struck him high in the shoulder, knocking him down, though he got up in a moment, attempting to run, but made poor headway. I next shot him in the front leg, breaking it just above the foot. This put him pretty well out of business. I ran up within sixty yards and shot again, but I was too sure and missed clean; but my fourth shot broke his neck. This was a two-year-old with a fine coat of new fur. After skinning and hanging up the hide it was 10 a. m.

At 2 p. m. I saw an old bear with three cubs, and began working toward them, but discovered Howard had also located them. As he was the only one who had not killed anything, I thought I would sit down and watch the battle, for I was on much higher ground. The bears were feeding toward him, and the wind was in his favor. When about 150 yards away from him they scented me and began to run in his direction. The country being badly broken, the bears got within sixty yards of Howard before they came in sight again. Here was a chance to kill four bears on open ground. Howard started shooting, getting five shots at close range, but he seemed to have bear fever and failed to connect, although he always makes a good score at target.

We returned to camp, finding the other boys had not returned. They "siwashed" it for two days. We did not leave camp on the 29th as clouds and fog hung on the high peaks. Just at dark Lee and Mack returned. Mack killed another, and Lee saw two bears,



MACK PACKING IN SHEEP.

but did not try to get them, as he wanted sheep.

On the 30th Lee and I went up the left fork of Hunter's Creek, Mack and Howard taking the right. We reached timberline at 12 noon and located two bears about a quarter of a mile distant. They scented us and ran, with us after them till out of breath, trying to get a shot at them before they entered the alders. On reaching a high knoll we decided they had gone into the brush, so we sat down to rest and comb the hill with the glasses for sheep. Seeing none, we walked a half mile over a little rise and ran right onto the bears. Being ahead, I motioned to Lee to shoot, for they were only off about forty steps. I shot, knocking my bear down. The other one was running when Lee shot. He went forward, but was up again. I looked at my bear and saw him up and going, so I fired again, hitting him in the hind leg, but he still kept going. My next shot broke his front leg. He was now on steep ground, rolling and running, and after I fired once more I saw no effect. I fired my last shot and saw fur fly again, and he rolled against some brush and stopped. Lee's bear got into the brush, leaving a bloody trail. Going down to my bear, to make sure he was dead, we followed into the brush to locate the other one, but failed to find him. As we were near Hunter's Glacier and the surrounding country looked excellent for goats and sheep, we decided to lay out that night. We had bear meat and young ptarmigan for supper and breakfast.

As soon as it was light enough we left our campfire, having had a pretty tough night, as it was very cold, freezing ice all the way across small streams. After going a short distance Lee took out his glasses and located eight sheep about one mile away. While working toward them Lee spotted a bear feeding on the opposite hill. He tried to show me the bear, but I saw the wrong one, so there were eight sheep and two bears in sight at once. Following the sheep a ways, we found it to be a bunch of ewes and lambs, so

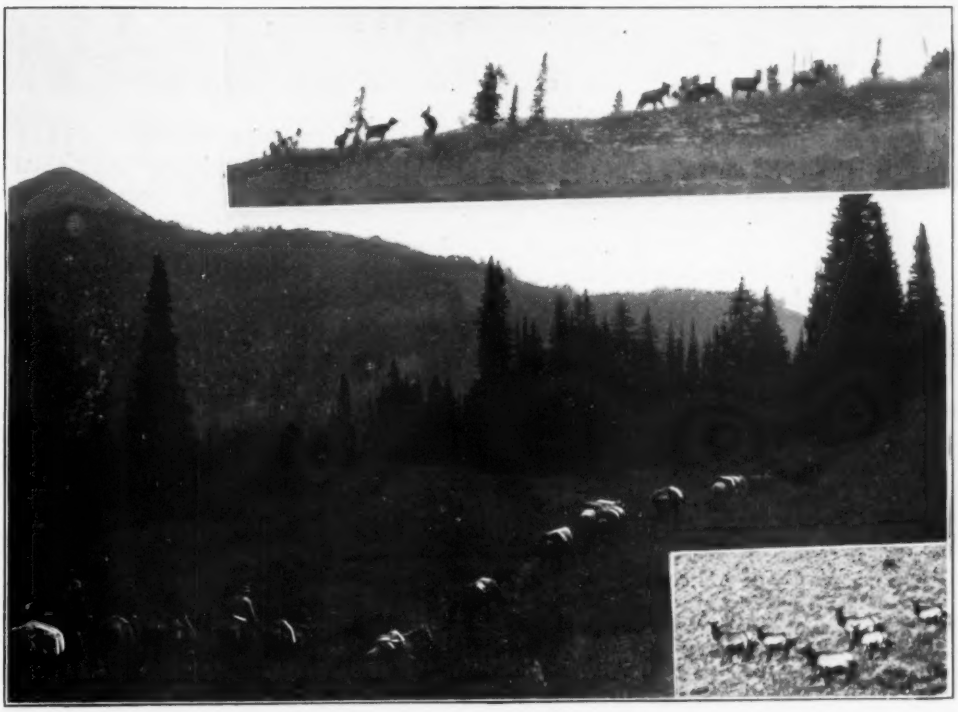
THE AUTHOR'S SMALLEST HEAD, MEASURING 12½ IN. AT BASE.

we didn't go after them. We went on up the cañon till we came to the glacier and saw two white objects on the other side of the glacier. They looked like a couple of Polar bears, but on putting the glasses on them we saw they were goats; but we didn't go after them as we wanted sheep; besides, they were in the opposite direction from where we intended hunting. We ate our lunch at noon, and while sitting there saw five sheep lying down about a mile distant. They could be plainly seen as they were on green moss, while the sheep are snow white. We tried to get on to them but they gave us the slip. At 5 o'clock we located two rams feeding together. Lee crawled behind rocks until he came up within 150 yards. The sheep were watching me, standing broadside to him, so he picked the one with the largest horns and fired, catching him just back of the shoulder, dropping him in his tracks. His second shot went wild over the back of the other sheep, while the third ball struck rock ahead of him. He stopped and looked back, when a .32 caught him in the neck, putting him down for good. After I helped him dress his rams, we started for timber. It was nearly sundown, and I saw a big ram that looked to be an easy mark, so, as the law allows three sheep, I wanted another good head if I could secure it. Taking Lee's glasses I looked him over carefully and decided it was a fine one, and after him I went. I easily got to within about 175 yards of him, when he stood up and looked in my direction. I took careful aim and fired, but I made a wild shot and struck the rock under his feet. One jump and he was out of sight. I ran about fifty yards to get on higher ground, when to my surprise I saw him coming up the point about 100 yards away. Throwing my gun to my shoulder, I shot, hitting him just behind the shoulder, the bullet coming out in his flank on the other side, dropping him. His horns measured 12½ inches at base, but one was broken off at the point, spoiling the head.

Dusk was falling, so we went three miles to timberline and camped, roasting some sheep meat for supper and cutting some boughs to sleep on and enough wood for the night. After talking over our day's work we tried to sleep, but it was too cold to do much sleeping without blankets.

(TO BE CONCLUDED.)

Salmon fishing in the Willamette River, near Oregon City, Ore. Compts. Perry Ketzmiller.



TRAVELING THROUGH THE SUMMER HOME OF THE ELK.

Room should be given the pack horses to string out on the trail. The mountain sides and little valleys are clothed alternately with virgin forests and succulent grasses where thousands of wild game animals roam.

HITCHES AND WRINKLES OF CAMP AND TRAIL

How to prepare for a camping trip; how to pack, how to cook, what to take and how to enjoy yourself while in the hills. A chapter on throwing the diamond hitch—all by one of America's most noted guides and hunters.

TEXT AND PHOTOGRAPHS BY

S. N. LEEK

For seven months of the year the higher altitudes of the Rocky Mountains are snowbound. For nearly this length of time many of the very numerous trout streams and lakes are icebound; but for three months of the remainder of the year the sun and all nature smiles. The mountain sides and little valleys are clothed alternately with virgin forests or succulent grasses where thousands of wild game animals roam and feed and their young sport and play. The air is ladened with the aroma of spruce and balsam and sage,

and the perfume of myriads of wild flowers of every color and shape. The numerous varieties of birds flit about and sing among the trees, nest and rear their young; and the trout, after their long confinement beneath the ice, leap from the cold, sparkling water.

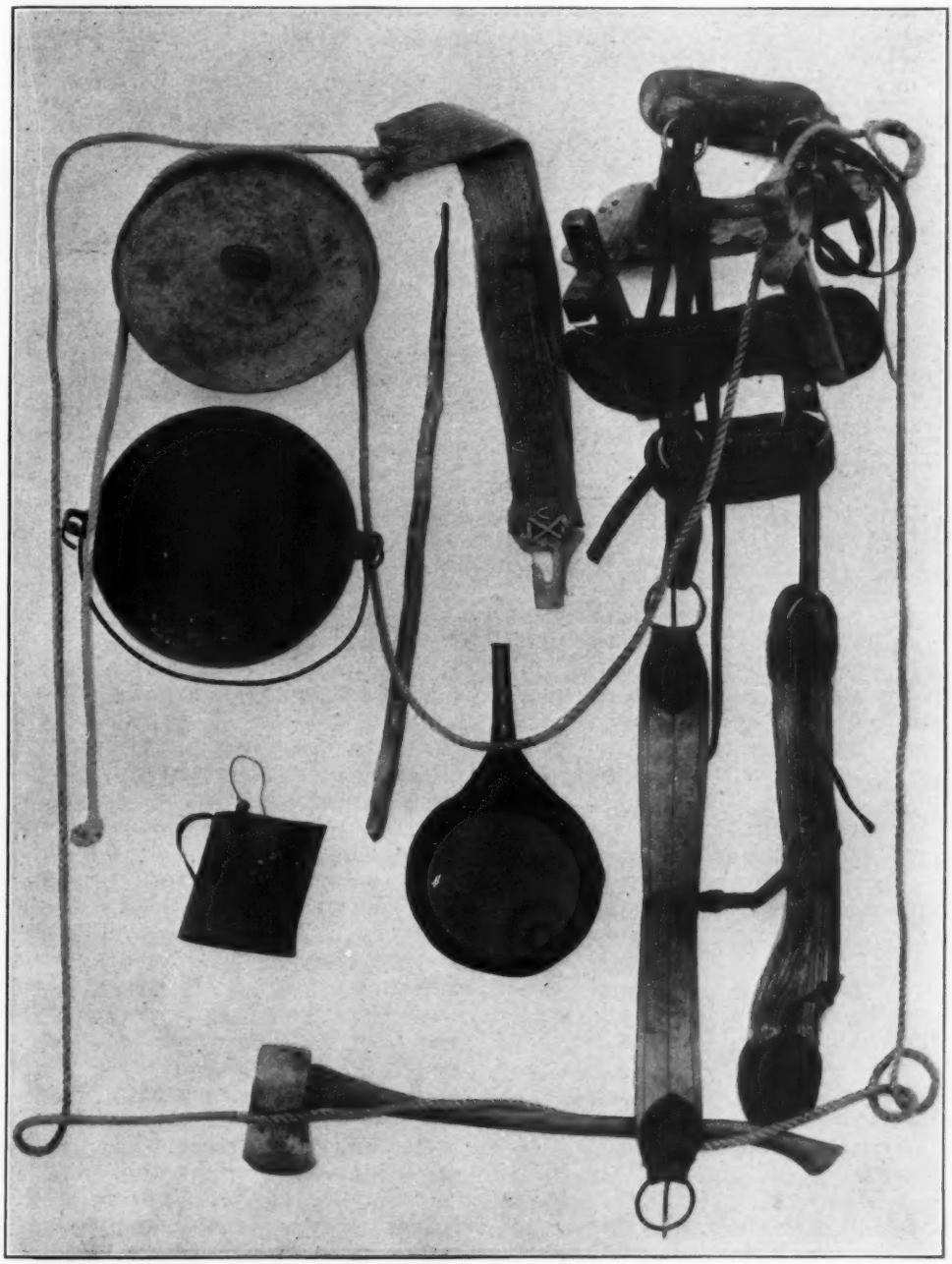
There are thousands of square miles of this kind of natural paradise in Wyoming, where it is possible to spend weeks or even months without meeting a person or aught but wild nature unonly accessible with saddle and pack horses.

For the benefit of those wishing to take such an outing I give a few points learned during my varied experience of many years of traveling and camping in this way. This information is not supposed to be complete, and is meant to assist only the beginner and to give him a small conception of outfitting and managing the trip, that he may the better be able to enjoy such an outing.

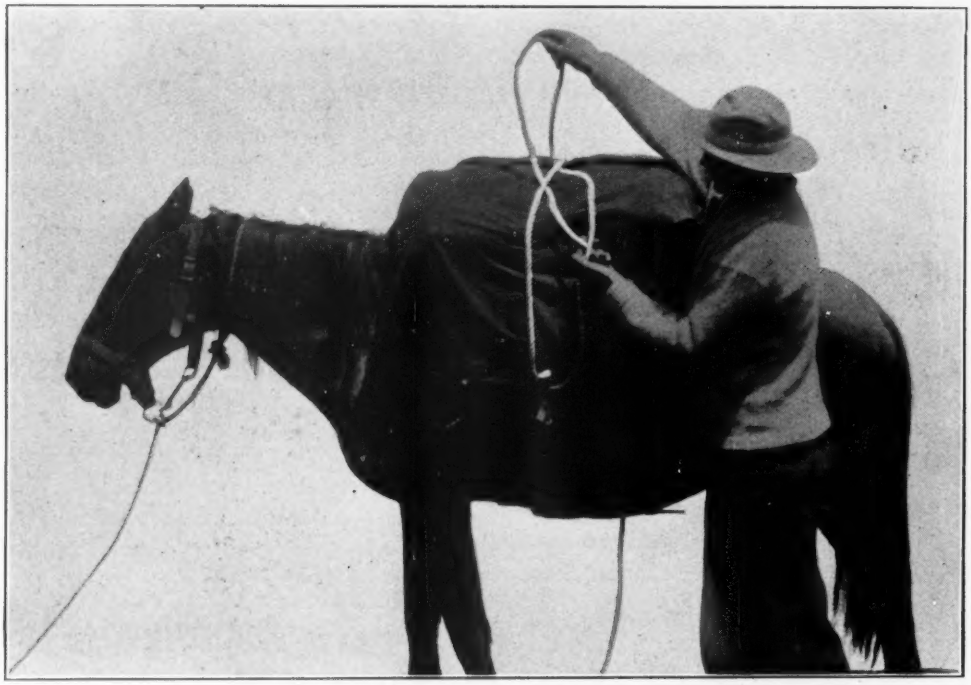
THE AUTHOR'S CHRISTMAS BOY, HOLLY. SUCH TROUT ARE FOR THE FAVORED ONES ONLY. AFTER THEIR LONG CONFINEMENT BENEATH THE ICE THEY LEAP FROM THE PURE, SPARKLING WATER.

defiled by man, for the state contains but two persons for each square mile of her territory, and these are confined mostly to the towns and more fertile valleys, leaving thousands of square miles where nature rules supreme. There is no restricted area where camping is not allowed; it is all free for the recreation and outing of the nature-lover. Some of this country can be reached by auto or wagon, but the wildest and most rugged portion is

The horse is the essential part in the transportation of the party; their outfit and supplies and their management and care have much to do with the pleasure of the trip, for if the horses are to retain their strength and spirit during a long trip they must have ample time to graze and rest. They must be used humanely while on the move, for they are only flesh and blood, and there is a limit to their endurance. If treated kindly they will respond;



A FEW OF THE ESSENTIALS FOR A HORSEBACK CAMPING TRIP: DUTCH OVEN AND LID. COFFEE POT, AX, FRYING PAN, POKER STICK, PACK SADDLE WITH DOUBLE CINCH, LASH CINCH AND LOOSE ROPE.

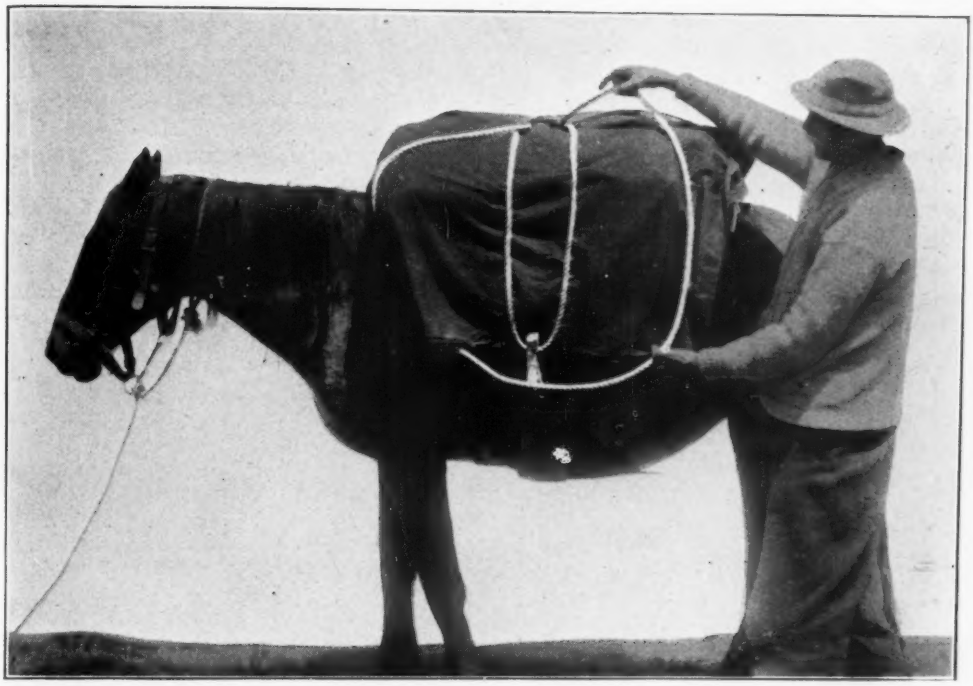


CUT NO. A.—SHOWING FIRST AND MOST PARTICULAR MOVE IN ADJUSTING THE DIAMOND HITCH; LONG END OF ROPE BELOW.

they are man's most faithful friends.

In selecting horses choose gentle ones. This to facilitate packing up and also to catch at camp where no corrals can be had. To travel light, but with all necessities for comfort and provisions for a three or four weeks' trip, one pack horse for each member of the party can be made to do, and of course one saddle horse each. For horse furnishings take a saddle, bridle, saddle blanket and rope for each saddle horse; an ordinary cross-tree pack saddle with double cinch (or if with single cinch, then with breast-strap and breeching), saddle blanket, lash rope, about thirty-five feet long, with lash cinch attached, canvas pack covers for each pack horse, a pair of hobbles for each horse and a small, clear-toned horse bell with strap.

Take granite-ware camp dishes according to party; plates, cups and stew dishes; knives, forks and spoons; dutch oven, frying pans, coffee pot, canvas water bucket and wash dish (all dishes should nest as nearly as possible) and a good axe with leather scabbard or wrapped with cloth to prevent cutting in the pack. For supplies there are different tastes to satisfy. The idea here offered is to take staple articles that can be prepared in camp quickly and easily. By this I do not mean ready prepared food, for to cook in camp is one of the pleasures of the trip, and at no other time does well-prepared food taste so well, nor is it ever eaten with more relish. Take about three-quarters of a pound of the best flour per day for each member of the party. The flour should be placed in an additional strong sack, as likewise the sugar. Lard can best be carried in bacon form and tried out as needed; this gives to the trout an added flavor. Coffee can be had ready ground in small sealed cans; milk in evaporated form in cans. Cream of wheat, oatmeal, salt, rice and such things should be carried in small cloth sacks; baking powder in small cans (the can that is in use can be carried in the flour sack). Butter should be packed in



CUT NO. B.—ADJUSTING THE DIAMOND HITCH. "YOURS TRULY" MANIPULATING THE ROPE. RIGHT HAND IS NEAR THE END OF ROPE WHICH HANGS TO THE REAR.

small tin cans; eggs wrapped separately in paper and packed in a box. As eggs are removed the space should be packed full of grass; assorted evaporated fruits, macaroni, cheese, potatoes, syrup (in small cans, rather than one large can), pepper, pickles (in glass), catsup, a few candles, soap, matches and such other things as desired. The small articles are best carried packed in panniers; these may be bought and are best made of heavy canvas with leather ends. They are provided with leather loops to hook over the cross-trees of the pack saddle, and should be packed about the same size and weight, about fifty pounds each, one on each side making the side packs.

A good pack for a horse is 150 pounds. Top-heavy packs should be avoided, as they gall the horses' backs. So keep the weight as low as possible. A good pack would be about sixty pounds in each pannier and folded sleeping bag or tent on top. Another good pack would be a sleeping bag on each side as ride packs, about fifty pounds each; then on top between the forks of saddle place the sack of potatoes, or sugar, or other small, heavy article, and on top of this place the folded tent, or other like soft substance; and within the folds of tent place the axe and fishing rods, with handle or ends projecting back. Care must be taken that nothing is left loose that can possibly work under the saddle, and that nothing of a hard nature touches the horse's back, or that will touch when the pack settles down closer; for if it does, a sore back is the result.

In slinging side packs to the saddle other than pannier, use $\frac{1}{4}$-inch rope about thirty feet long; divide this in the middle and make fast to front cross-tree of saddle by double half-hitch. In packing allow these ropes to hang on each side from front of saddle to ground; place side pack in position, flat side to horse. Bring the hanging rope up around the front end of side pack, around front cross-tree of saddle, then to the rear fork, then beneath

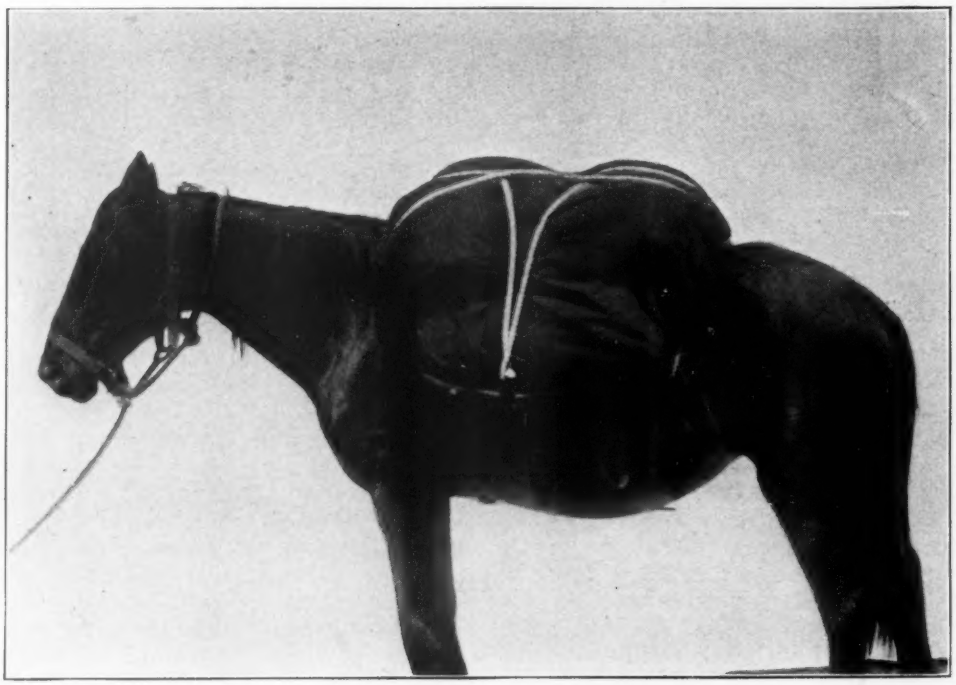
back end of side pack, and back up and tie to rear fork, with end of rope secured so it cannot possibly work beneath the saddle; likewise with other side pack.

Many packers, in hanging on the side packs, tie the two ropes together across the top. This is a mistake, as, should one side pack prove heavier than the other it will pull the lighter one up and a badly balanced pack is

color of pack cover should be gray or brown, rather than white.

Now we are ready for the lash rope and diamond hitch. The hitch is thrown in various ways; some are complicated and require two men to place. I will describe the simplest, and therefore the best, called the one-man diamond hitch.

Stand on the left side of horse; throw the lash cinch over the center of



CUT NO. C.—THE COMPLETED PACK.

Pack cover should be gathered in and held with lash rope; rope should be so placed on corners of pack that it will not get scraped off in going through timber.

the result; and unless fixed will cause a sore back. Next place on top pack, being careful to preserve balance of pack and keep both sides same size and height. Over this the pack cover is spread. This should be of strong material, and of a size to reach beyond the pack on all sides, about six inches. It not only serves to protect the contents of pack from wet by rain, but protects it from damage in passing through timber or brush; and if you don't wish to be too conspicuous on the trail, the

pack; fetch the end of cinch beneath the horse and place rope in the hook; then take up slack around pack and horse (see Cut No. A). Now with right hand take loose rope about four feet from hook and tuck it, doubled, beneath the rope on top of pack, with long end of rope below (as in cut). Pull through slack rope enough so loop held in right hand will pass around side pack on the opposite side of horse, allowing the loop to hang loosely on that side. Then with the left hand (see

Cut No. B) draw sufficient rope out between the two ropes to pass around the side pack, front and rear on the near side, as in cut, letting it hang loosely. Now the loose end of rope should be placed to the rear on other side of horse. All that remains to be done is to tighten the rope as you go, and place in position. First tighten the rope around the pack and horse, and hold with one hand on top of pack while you pass to the rear of horse to the opposite side. Then place the tight rope around the rear lower corner of side pack and along bottom to the front corner, and up, holding tight while you pass beneath the horse's neck to the other side. Then place the tightened rope around the lower front corner of side pack, then along bottom to the rear corner, and up, holding light while you pass to the rear of horse to the other side. Then with foot against pack, and end of rope in hand, pull very tight. If the rope is right length you should have an end about four feet long. Pass this around rear lower corner of side pack and tie to main rope near cinch. You will note there is one rope under each corner of pack, excepting where you finished, which has two. You will also note that in placing ropes you passed entirely around the horse one and a half times. You now have the completed pack (Cut No. C). Care must be taken in placing the rope around the corners of pack so it can't get scraped off in passing through timber, and all loose corners of the pack cover should be gathered in with the rope so they won't flop.

TO COOK IN CAMP IS ONE OF THE PLEASURES OF THE TRIP.
The dutch oven in action. Should transportation facilities forbid taking dutch oven along, a frying pan can be used as shown in picture, and good bread baked.

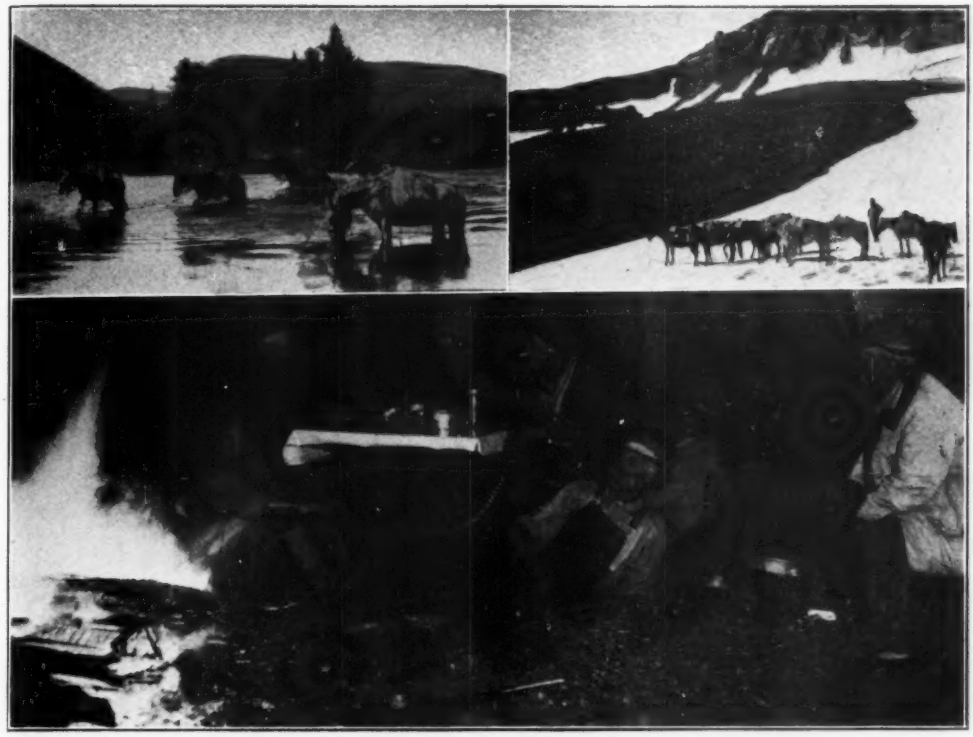
Each pack horse should be provided with a halter, and when packed, left tied till all are ready to start. Then each one is let go with halter rope tied to top of pack in such a manner as to prevent grazing along the trail. When all is ready the guide mounts his saddle

horse and calls, "Fall in," and starts out on the trail. The pack horses line out after him, the party bringing up the rear. Pack horses will usually follow a white horse leader best. If on a long trip the same leader should go ahead all the time. Those in the rear should not crowd the pack horses, so there is not room for them to string out on the trail. Particularly is this rule to be observed over a rough or dangerous trail. Slide rock or rocky hillsides should be avoided. If a hillside is of earth a horse will go nearly any place a man can, but they cannot stand upon a smooth, slanting rock. It is wonderful the intelligence they will show in zig-zagging back and forth upon a steep hillside, always working higher or lower, as the case may be; and upon the brink of a dizzy precipice they show no fear where a single misstep might throw them over the edge to the depths below. If near camping time they always seems anxious to assist in the important job of choosing a camp site.

A start can usually be made in the morning about 9 o'clock. About three miles per hour is fair traveling in the mountains. No stop is made at noon, but lunches can be carried by those who wish. A short stop should be made about 11 a. m., the pack horses watered and packs adjusted and tightened up. Camp should be made about 3 or 4 in the afternoon. This gives plenty of time to get dinner and put camp in shape before night and a little time for fishing or other recreation, for after the long time in the saddle a little walking is fine.

In choosing camp, three essentials combined are necessary — wood, water and grass. There should be some open grassy ground for the horses to graze on; the camp should be near good water, preferably a trout stream, and in the edge of timber for shade, protection from the wind, and for camp wood. In

CLOTH SPREAD UPON THE GROUND ANSWERS AS A TABLE.
A regular visitor in camp is the Canada jay or camp robber (upper bird). Sometimes the chickadee (lower bird) also frequently calls.



REHEARSING ADVENTURES OF THE DAY. THE CAMP FIRE LIGHTS UP THE FACES OF THE CAMPERS AND CASTS WEIRD SHADOWS OFF IN THE GLOOM.

setting tents it is best to have them facing the east, to get the early morning sun; but care must be taken not to place camp near dead trees that are liable to fall at any time. They may look safe during the day, but not so at night when stretched out in the sleeping bag.

Camp ground chosen, all pack horses are caught and tied up some little distance from the camp site; then one by one they are led up, unpacked and unsaddled, the horse carrying the hobble sack being unpacked first. Each one as unsaddled is hobbled and let go, the bell being placed upon one of them; the saddle horses being attended to last.

A good-sized fire is now started, and by the time water is brought and things gotten ready the fire has burned down to a bed of coals. First the dutch oven is gotten ready, the lid placed upon the fire to heat; the biscuits mixed with cold water, kneaded out and placed in the well-greased cold oven and a small piece of butter placed on the top of each; then with poker stick a few live coals are raked out, the oven placed upon these, the hot lid is pushed down in the fire and a lot of live coals raked upon it with the poker stick and placed upon the oven. A few slices of bacon are put on to fry; the coffee pot is also put on, and in a few moments the bacon fat is ready. The trout are put on to fry, and soon all is ready for the most perfect enjoyment of a dinner that is impossible under any other environments. Upon one side we have the rushing, sparkling stream, with its gamy trout, the towering pines and primeval forest; upon the other, the gently sloping mountain meadow, upon which the tired horses alternately crop the abundant grass, and rest and the camper's busy day in the pure invigorating air, has added a zest to his appetite that cannot be purchased with the wealth of a king. They sit around the cloth spread upon the ground that an-

THE AIR IS PERFUMED WITH MYRIADS OF WILD FLOWERS OF EVERY COLOR AND SHAPE. THIS PICTURE INCLUDES THE COLUMBINE, WILD GERANIUM, WILD BLUE PHLOX, ETC.

swers for a table, and each helps himself to the portion desired.

After the meal the tent is put up, spruce or balsam boughs are cut and placed, and the sleeping bags unrolled; provisions are put away in one place and covered with a pack cover and the saddles in another place, and all is ready for the night; and though the day has been warm and pleasant, as soon as the sun sinks beneath the mountain peaks the air gets chilly, and the sweater or coat must be donned and a good fire built up. And now a band of elk is seen to emerge one by one from the timber into the meadow. They pay but scant heed to the horses or the sound of the bell, but walk about, selecting the choicest bits of vegetable growth to feed upon, and the horses stand and stare at them. As it grows darker the fire lights up the faces of the campers and nearby objects and casts weird shadows off in the gloom. Stories and jokes are now in order, but no practical jokes should be played in camp. Soon the sleeping bags are sought in blissful rest and repose, after a strenuous but enjoyable day.

If awake during the night, the tinkle of the horse bell can be heard as the bunch feed about in the little meadow, or the plaintive cry of the elk calling to each other. A chorus of coyotes may be heard from a nearby hilltop, or the deeper notes of the gray wolf from somewhere farther away. If a storm is brewing a hoot owl may entertain you for a while from the top of some dead tree nearby. If the storm materializes during the night the raindrops will be heard pattering upon the roof of the tent but a few feet above your face. Further than these, nothing will disturb the campers during the night. They are safer thus with wild Nature than in their own homes in the city.

In the morning, though it be midsummer, all may be white with frost, with a thin coating of ice over the water in the bucket. But a few minutes of the bright morning sun and again all is warmth. Soon the coffee is boiling, eggs a-sizzling and oatmeal popping, and the cook is tossing the hot cakes.

Now, a word about what to and what not to wear: Why must the camper, because he or she is going into the woods and mountains, encumber him or herself with an outfit of clothing perfectly foreign to what they are used to at home? Why encumber their feet with heavy, stiff footwear, loaded with iron to harass and tire? Why fill their duffle bags with articles that are useless, or that could just as well be dispensed with on the trip? Two suits of woolen underwear, two or three heavy shirts, an ordinary woolen business suit, grey color preferred; a good woolen sweater extra, one or two pairs ordinary shoes with a few Hungarian iron nails in the soles to prevent slipping on the pine needles (fifteen nails in front and seven in the heel), and two or three pairs of heavy socks, and light-colored, medium-rim felt hat—and there you are. Add to this a few handkerchiefs, a pair of buckskin gloves, an oiled poncho, two or three towels and toilet soap and razor, if you wish, and a personal outfit for thirty days is complete.

Lady campers on such a trip should provide themselves with divided skirt made of some soft gray woolen material, and ride astride, for in going over the rough mountain trails a side saddle is very tiresome for the rider and hard on the horse. Chaps, spurs and quirt are an abomination on a camping trip. They will do very well for the boys who wish to appear as cowboys, but are in the way on this kind of a trip.

A 7-ounce split bamboo fly rod, with reel, leaders and flies tied on No. 4 hook (royal coachman, brown and gray hackle, silver doctor, coachman and such) are needed. Landing nets, gaff hooks, wading boots and fish baskets are superfluities. It is not fish you want (more than a few to eat), but recreation. Think of fishing for trout where you must be limited to two each per day or waste them. To illustrate: The members of one party at a certain

fishing water here were limited to two fish each. Sixteen trout were taken. These strung upon a steel chain fish string furnished by one of the party was all one man could lift. On another short trip twelve trout were taken. One of these weighed 16 pounds, another one 14 pounds; but such fish are for the favored ones only. Usually the trout will weigh from ½ to 3 pounds each.

amusement in shooting at a target; for no dangerous animals will molest you, and certainly you will not wish to destroy any others.

It is hard to improve upon the wall tent; about 8 x 10 size is large enough for two or three persons; 8-ounce canvas is heavy enough to shed rain, and is light to pack. In packing, it should be enclosed in extra cover to prevent wear. Do not carry pegs, nor poles.

ALONG THE SHORE OF YELLOWSTONE LAKE.

On the summit of Mt. Sheridan. As we stood there that day and looked to the east, at the base of the mountain lay Heart Lake, to the north Yellowstone Lake, to the west Lewis and Shoshone lakes, shining like silver among endless green. To the south, their tall spires piercing the skies, was seen our old friends, the Tetons.

A good camera should be carried, for what is nicer to verify your fish story than to show your friends the big (?) trout you caught, or the glacier, or waterfall you visited, or the pack train strung out on the trail, camp scenes, or the game you saw? In selecting the camera or kodak, probably the post-card size would be as handy as any, and give good results.

Unless on a hunting trip you will have no use for firearms, unless for

These can be improvised at camp. A good way is to cut holes in tent in each end in upper corner near ridge. Through these holes pass the lash rope; make one end fast to a tree the proper height, pass the other end of rope over the limb of another tree fifteen or twenty feet distant and pull tight. This leaves tent hanging on secure ridge and needs only to be staked in the usual way.

Should mosquitos be troublesome,

open tent wide, then place smudge therein for a few minutes; thrash around in tent with brush, then remove smudge and close tent carefully till bedtime, and no mosquitoes will bother during the night.

A sleeping bag is much preferable to any other kind of a bed. These can be purchased. There are many kinds of good ones on the market, including the Eiderdown pneumatic bed, the Fiala sleeping bag, the Kenwood and others. I use a Kenwood. Or they can be made. These bags, to keep a person warm during the night in the high altitudes of the Rocky Mountains should weigh, including bedding, not less than about 35 pounds, and a person, to feel well, should sleep warm. To make one, use good canvas, sewed like a sack, 6½ feet long and 3 feet wide; leave it open for a short distance on the side near top, and the bottom canvas should extend at the head about 4 feet and a little wider than the bag. This will make a cover over the pillow and head of the sleeper, for protection if during the night a rain should come up when sleeping without tent. The balance of bag can be made of a couple of comforts doubled lengthwise and sewed across the bottom, and within 18 inches of the top on the side; and a single or double blanket, doubled lengthwise and sewed across the bottom and up the side nearly to the top. Small holes should be cut in the bottom corners of all. Two pieces of ¼-inch rope should be procured, cotton preferred, about 8 feet long. On one end of each rope tie a short stick by the middle; wind the other end of rope with thread. Pass these ends through the holes in the blanket, from inside out, and pull through. Next pass the ropes through the holes of one comfort, from inside out, and draw the blanket into it. Do likewise with the other comfort and canvas cover, placing the open sides on alternate sides. I will allow the camper to devise ways and means of getting into it, but on emerging in the morning place a foot in each lower corner and straighten the bag out, then back out carefully, leaving the bag straight and smooth. Then it is ready to roll or fold to place on horse.

To clean and air such a sleeping bag, hang to a limb by the ropes during the day when camp is not to be moved, keeping the bag open with a stick, and with arm up inside, while suspended, beat well with a stick.

Two sleeping bags make excellent side packs. To prepare them to be packed in this way spread them flat on the ground; then at the head end place pillow, a few personal effects, such as camera film, fishing tackle and such to the amount of probably fifteen pounds. These should be placed, and the bag rolled, so that it will be flat rather than round, and bound securely at each end with the projecting ropes that should go twice around and tie. If sleeping bag is to be used as top pack it should be folded once in the middle with flap and ropes gathered inside.

The Awakening—A Sermon

For years I have sacrificed; struggled in vain, to fulfill an ambition; wealth to gain. I never knew what vacation meant, nor the pleasures of sleeping out doors in a tent. When within reach; my goal and fame, something happened—the unexpected came. I had, during those years of strife, forgotten the most essential of life, my health.

But the day is fast approaching near, when I shall leave home and friends so dear, to go to the mountains, many miles away, from the cities where corruption and temptation sway. There in the vast wilderness alone, I will build myself a cabin home, where naught is there to break the spell, of peace, content, and there I'll dwell, for all eternity.

STERLING G. HARVEY.

INDIAN MEDICINE TENT.

When ill, the Indians cover the poles with blankets, heat the stones seen in one end of the tent, pour water on the stones to form vapor, then crawl into the tent and take a vapor bath.

A BEAR HUNT IN MONTANA

T. J. KERR, M. D.

All through the long hot summer months we had been looking forward to and making preparations for September. To some, September means nothing but a change of season, a frostiness of the night air, a brownish tint to leaves and a deadening of summer's green coat.

To us it meant all that and more. This was the time that we took our annual hunt for big game, an outing in the woods, a delightful anticipation. We did not want a rest; we wanted a change, a workout. Clad in our mountain togs we wanted to get out and once more scale the mountainside, ride the ridges among the big pines, hear again the tumultuous baying of the hounds and follow in the mad chase as old bruin led from the roughest crags to the deepest cañons of the Rockies, fought his way skilfully and many times eluded for a few minutes the pack of bear hounds which would eventually bring him to a tree; out there away from the smoke and turmoil of civilization, in many places where man's foot had not left its imprint and nature was king. Out where the eye can look from the frosted peaks hundreds of miles over majestic billows of mammoth pines, through whose valleys run the clear mountain streams of sparkling water which comes as near being the fountains of youth as any yet discovered. We were the same bunch, the happy four, Dr. J. H. Kerr and wife of Akron, Iowa, myself and wife of North Platte, Neb. We started from North Platte Sept. 3 in a Buick car and for several days spread all over western Nebraska, South Dakota, Colorado and Wyoming looking over the country, and on Sept. 7 landed in Cheyenne,

Wyo. Here we left our car and started over the Harriman System for Plains, Montana, where we were to meet old Steve Elkins, the guide, and saddle out into the mountains. Nothing of importance happened on this trip except that the trains ran so often that we usually selected the one that reached the next place just after the train we wanted had pulled out. However, we landed in Plains on the evening of the 10th and found Steve waiting, so after supper we prepared for the trip next day. Nothing of note happened the following day as we rode out, starting about 8 o'clock. The weather was ideal and we breathed in great quantities of the cool pine-scented mountain air and felt ourselves truly loose and away. We rode through the woods, stopping now and then in the valleys to drink the water which gushed forth in streams fed from springs in the mountainside higher up; then the trail would lead to the high ridges and we could peer out over miles and miles of woods, cañons and rocky peaks. At about 6 o'clock we came to a crest and looked over. Through the trees we saw far below us an opening or table, "Big Prairie," so called. A table of about 200 acres where plenty of feed grew for horses, and where water and wood was on every side. Here also we discovered Steve's camp and later met Mrs. Elkins, Harold and Elsie. Aud such a camp. The wizards of the woods had spent all the summer there and a more complete and convenient camp had never been pitched. Beds, tables and chairs, if you please, all of wood craft, a range for cooking, and we had just expressed our delight when there was a rustle in the bushes and a Jersey cow, the pet of the camp, strolled in to be milked, and our delight bubbled over into yells of joy as we learned that all the rich Jersey cream we could use was at hand, fresh every day. After a supper of hot biscuits, honey, mountain trout, fried potatoes, fruit, rice and cream we were just in time to witness one of the most glorious sunsets that ever went down in the west. Away with your Switzerland sunsets; go to the Rockies! The golden glow faded into a pink and gray, ever changing, deepening here, fading there, the mountains on every side with darkening cañons and greener ridges, finally all settles quietly into the shades of night; the moon rises and no sound penetrates the awful stillness that falls over mountain and valley but the distant hoot of the owl and later the shrill howl of the prowling coyote. We were up next morning with the first streaks of dawn and after

STILL WATER ON THE THOMPSON.

breakfast saddled our horses to go for a little scouting and perhaps for a bear. We had gone scarcely two miles when Denver and Lady, the star trailers of

The girls clinging to one of the rocky cliffs in Bear Canon.

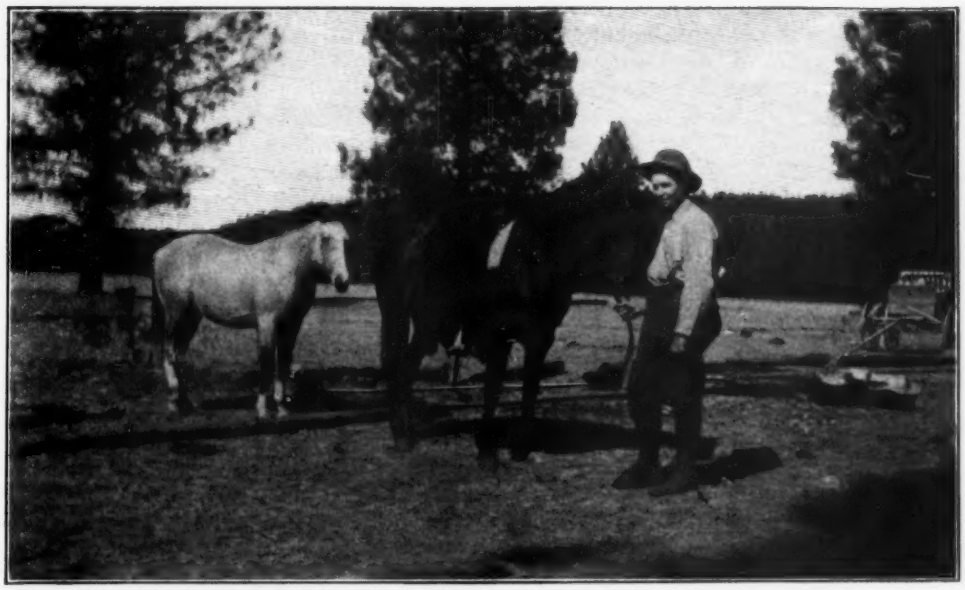
Steve's pack, struck a bear trail. Soon they had it fairly well straightened out and the rest of the pack was turned loose, and the music that we had longed for began.

But old bruin was wary and the chase led up the cañon, over the ridge into rocky country where dry pine needles lay blistering hot in the noonday sun, for it was now about 1 o'clock and the trail could not be followed, so we were doomed to disappointment. Dr. J. H. went on a scouting tour by himself out around "High Peak" about ten miles away and on his return sighted a bear on the top of a ridge across a big cañon. He tells us how he made the earth tremble and rent the woods in twain with musketry as he turned his U. S. Springfield loose, but failed to connect with the bear. We all reached camp late in the afternoon and after supper told bear stories and went to bed happy. The next day, Sept. 13, we had another bear chase with exactly the same results as the preceding day, so we decided to lay off a day on the bear and next morning, girls and all, mounted our horses and rode abou ten miles down the Thompson River, where we fished for trout and landed some speckled beauties for the frying pan on our return to camp. It was on this trip as we neared Fish Trap River, feasting our eyes on the rocky crags high above us and thinking we were about the only human beings that had traveled that way since Adam was young, that we crossed a trail leading up Fish Trap on which was posted the following sign:

"Good camp ten miles up. Shelter for man and feed for horses. Go in, cook supper, make yourself at home. Don't spit on the

BEFORE AND AFTER THE WORD IS GIVEN.

The dogs are so well trained that no matter if half-starved they will not touch the food on the board before them until they hear Steve say, "All right, boys."



Dr. J. H. and the big bear he met while going through the woods.

floor; please feed the cat, and for God's sake wash the dishes."

We reached camp about 6 o'clock, tired, but with the feeling that the day had been well spent. The next morning we went to the mountains west of camp, but our chase ended without results. On Sept. 16 we started for the mountains east of camp where we had not hunted as yet, and was scarcely over the ledge from camp before Denver struck a trail which after circling about five miles north, doubled back to the big canyon between East Mountains. We climbed the mountain and located the dogs below. Steve sent his horse home and followed on foot. Dr. J. H. worked the cañon higher up, while Harold and I took to the ridge. The trail burned out in the hot noonday sun and about 2 o'clock we started for camp. Steve came in about 5 o'clock. Dr. J. H. had not showed up yet and supper was almost ready when far up in the mountains we heard his U. S. Springfield belching out demonstrations of war in rapid succession and we knew that he was not in the habit of shooting at shadows. Five shots, a slight pause, then five more echoing and re-echoing against the mountain across the valley could be plainly heard in the quiet evening. In about an hour he came strolling into camp with a yearling cub tied behind his saddle and

Dr. and Mrs. J. H., resting in Bear Canon.

announced that the old bear was lying up there in the woods ready to be skinned. He had met the old bear and two cubs coming through the woods. One cub got away. The old bear and one cub was pretty well shot up, but considering the fact that they were about 150 yards away, running through the woods and in the gathering gloom of night, Dr. J. H. claimed that he was not supposed to hit a vital spot the first shot. However, we promised to let him off easy if he would show us the spot hung on the game pole. The two following days were without success so far as game was concerned, although we hunted farther to the southwest over new ground.

A good rain on Sept. 19 soaked us before we got to camp and wet down the dry pine needles, which was what we had been wishing would happen for a week.

On Sept. 20 Steve, Dr. J. H. and I started for the ridge ten miles to the west. When the sun came up we were

The bear that gave us a 25-mile chase.

where he last saw the cub that got away. This he consented to do, so the next morning the whole camp was on the spot early. The dogs picked up the trail quickly and all started hot on the chase. We covered twenty square miles of timber that day where that cub had trailed the night before, and he had made his getaway so completely that we never jumped him again. While Steve, Harold and I were on this chase, Dr. J. H. and the girls, by physical strength and clever manipulations, loaded the old bear on a saddle and when we returned to camp about 5 o'clock they had bruin unloaded and on the ridge and the dogs had already struck one or two cold trails.

These we followed for some time, but as they did not seem to warm up very fast Steve took off the dogs. Steve and I had been with the dogs while Dr. J. H. followed up another ridge to be in ahead in case the dogs should jump a bear and he would follow up one of the cañons. While following up a ridge Lady, the head trailer, broke on a hot trail and we turned the pack loose. We had located Dr. J. H. by signal about two miles ahead and towards him the dogs now started. By the time we reached the top of the

ridge where he had been, we located his horn about two miles further on, headed towards High Peak and we knew he was following hard after the hounds. We reached the place where he had been, but he could not be seen, heard or located.

Later he told us the bear turned at this point and headed down the cañon towards Fish Trap, about eight miles to the south. There was a lively chase, he keeping within hearing of the hounds. When he reached Fish Trap we had with us. Steve tried to intercept him but the brush was too thick to make much headway and they had passed by the time he reached the bottom of the cañon. He put the fresh dogs on the trail and the fight was renewed with increased vigor.

On the ridge I heard the chase follow up the cañon, then turn and come towards the west and up the ridge. I rode to a little saddle where they seemed to be headed for and dismounted. None too soon, for at that moment

RUNNING BEARS ABOVE THE CLOUDS.

"As we climbed the mountain we emerged into bright sunshine, the dense, heavy fog filling the valleys. The one in the picture was about ten miles across, and in the bright sunshine had the appearance of a great sheet of water."

the bear had crossed the river, made a circuit of about three miles on the other side and was coming back farther down stream. By a mad gallop he tried to reach the point to intercept bruin as he crossed back, but was too late, as bear and hounds had recrossed and again taken to the ridges where, ten miles back, Steve and I had almost given up our search for bear and dogs, when far down in the canyon we heard Lady and Black Brady fighting him. Steve left me on the ridge as we guessed the bear would soon cross over to the west again, and went down into the cañon with three fresh dogs that I saw Black Brady, Texas, Brownie and Red coming up the ravine fighting a black bear which was in their midst. I saw that it was up to me to either shoot this bear or get run over by both dogs and bear, which were now within about 50 yards of me, so when Mr. Bear was scrambling over a log and free from the dogs a moment, I tried for a neck shot, but got a little low, the bullet cutting his throat and both carotid arteries. This angered the bear and he turned and made a run at Texas (one of the hounds), catching him against a log about two feet in diameter. I thought is was good bye Texas, but by

A Bear Silhouette.

Perched upon a limb in a big spruce tree, Bruin thought he was safe from the howling pack below.

a clever twist and backward leap over the log he freed himself. The bear then made a rush at Black Brady, which brought him free from the pack and broadside to me. The second time I shot him through the heart and he went down in a heap. In answer to my horn Steve came up in a short time and we loaded the bear on a saddle and made for camp.

Figuring the distance, this bear must have run and fought the dogs for about twenty-five miles. As the dogs were all tired we had no more bear chases until Sept. 24. On this morning we started early and at sun-up were five miles out on the mountain.

It was this morning that we chased bear above the clouds, so to speak, for in the cañons and all over Big Prairie a dense white fog lay so thick that you could see but a few paces. As we climbed the mountains, possibly a thousand feet higher, the sun was shining brightly making the snow-white fog look like a great sea and the mountain tops as islands. Denver, the old champion trailer, was in the lead this mornin, and we had gone about ten miles when we heard him give tongue far ahead. Soon we saw him across the cañon on the opposite ridge going fast and baying at every leap. By the time we had reached the spot where we had last seen him, he had reached far south around a point and was coming up a ridge farther west. Steve started across the cañon while Dr. J. H. and I galloped north along the ridge in the hope of beating the bear to the head of the cañon. While crossing a clearing we looked across to the opposite ridge and saw that Denver had jumped a bear and two cubs, which were headed north with the pack not very far behind.

We unslung our rifles and poured lead across at this bunch of bears, but as the distance was fully half a mile we failed to connect with any bear meat so far as we could see. It was over a mile of rough country and fallen timber around to where we had seen the bear, and before we could get there dogs and bear were far to the north towards High Peak. We followed on, heard the dogs fighting the bear and tried to get down to where they were, but the cañon was at least a mile deep and the spruce trees so thick that we could not go faster than a walk. We got down into the cañon, but by that time the bear had been miles further north and was coming back along the ridge that we had just left. Steve by this time was coming up along the ridge and tried to get in front of the bear, but the fallen timber and thickets were so dense that it was almost impossible to get through at all. The bear made a large circuit and the last we heard they were headed for Fish Trap. The pack was scattered by this time and some of the dogs turned back. We reached camp about 5 o'clock, all wishing that we could have kept on with Denver, whom we heard last near Fish Trap. All of the other dogs came in, but at 10 o'clock that night Denver's

tent was still empty and we feared that the old trailer, fighting his battles single handed, had been caught, injured or killed out there in the mountains as we knew he never gave up as long as a fight was on.

We placed his supper in a convenient place near by and were mighty glad to find him in his tent next morning. Although bruised, scratched and lame, he was ready for anything in the line of bear that we might suggest.

Sept. 25 the girls, Sammie and Birdie (which is the mountain names for our wives), Dr. J. H. and I started out on foot to explore Bear cañon, a few miles east of camp. We had been near it before and heard the roaring water falls. This day we descended into its very depth and were well rewarded. We saw beautiful rapids, water falls, moss-lined tunnels formed by the rocks coming together far overhead making archways of a thousand different colored rocks with a torrent of water through below. We ate our lunch, took pictures, which was difficult because the sun does not penetrate to the bottom of this cañon, then followed the stream back into the mountains, using the moss-covered boulders as stepping stones.

We determined then and there never to travel abroad for mountain scenery while so much grandeur was going to waste in the Rocky Mountains of our own country. We were tired from the climb, but, oh the sweet sleep in our tents that night.

Next morning was bear day and we started early. Denver had rested from his strenuous chase and was again in the lead with Lady by his side. We rode many miles and were near High Peak far to the northwest when both Denver and Lady struck trail. After considerable milling, in which the dogs tried to straighten out the trail, Denver started south by himself and giving tongue at every leap. To verify the judgment of our old champion trailer we took Lady and the rest of the pack to the place where he had been last heard and the whole pack was off like a shot, the echo of their baying ringing against the mountain as they tore down the cañon.

With a yell we were in hot pursuit; our horses seemed to catch the spirit of the chase and cleared fallen timber with a sure footedness that was wonderful and that kept us within hearing of the hounds. Over the ridge and down another cañon the dogs swept while we galloped around and got there just in time to hear them pass in front of us. Steve went into the cañon, while Dr. J. H. and I made a run for Fish Trap, several miles to the south, where the bear was now headed. They raced down the cañon; we ran the ridge above them trying to get a running shot at the bear. The cañon was full of running, baying, fighting dogs determined to have bear, and the bear just as determined to get away. We got to Fish Trap and raced down the river to head him off, and about that time heard the dogs swing back to the hill. Things were getting too hot for

Denver, the champion cold trailer of Steve's pack.

bruin so he chose a tree and cleared himself just in time. In a few minutes we heard Steve's horn blowing "treed"

about a mile up the mountain. Then followed a climb of the hill, about a mile nearly straight up, which we did on foot, leading our horses, and found Steve calmly sitting on the ground with the bear up a tree, which was surrounded by the entire pack of dogs baying savagely at their game. Had we been nearer camp we would have roped the bear, which was small, and led him home.

As it was we were compelled to shoot him, and it was here that we learned the fighting qualities of even a small bear, for the .303 Savage bullet, after tearing a great hole in his side, passed through the center of his heart. With this wound he clung to the tree for about fifteen seconds, then fell to the ground and had considerable fight in him for at least a minute longer.

This was our last bear chase. We were out with the dogs one other time, but the trails were all too cold. Steve had to go into Plains on the 29th. We kept camp and cared for the dogs until he brought out another party. We spent the remaining two or three days exploring the mountains, fishing and hunting wolves. On Oct. 2 we broke camp and saddled back to Plains. It was like leaving a happy home forever to tear ourselves away from that camp.

Twenty days of recreation that made the blood tingle with new life and shaped the muscles like drawn steel. As the shades of the last night in camp closed about us we stand for a moment in silent admiration, conscious to the call of the wild. The sun sinks low to the west, casting shadows, first to the foothills, then slowly creeping across the valley, ascending the mountain. The river ripples on its way, the mists slowly rise, the birds seek their roosting place and nature folds itself quietly into the night to continue on as has been done for ages undisturbed in its rhythm by visits of man. We try to be a part for a time of this majestic scheme of nature, and each pine-covered peak and wooded cañon wraps itself in memory into a portion of our lives. As we turn in our saddles next morning for a last look at our old camp a lump rises in our throat and a tear to our eye. "Goodbye, old Prairie," perhaps we will meet again, but if not, recollections of your hospitality will afford us many pleasant memories in the years to come.

"Goodbye, old prairie, ages pass,
And your shady meadows stand,
A deep oasis rich and cool
In a pine-clad, rocky land.
Breathed we your piney, fragrant breath,
Lured you our souls to sleep;
Live on in memory and forever more
Your faithful vigil keep."

Sunset in The Mountains

When sunset's mellow light in splendor folds
The mountains in a shade of golden hue
A silent spell of rapture sweetly holds
The heart that to its homing hills is true.

Far into space brave thought in freedom flies,
To bear all burdens of the soul away,
And mystic beauty woos responsive eyes
Which watch the sun depart at close of day.

CHARLES H. MEIERS.

FROM A HORSEBACK GIRL'S DIARY

(SPOKANE, WASH., TO SAN FRANCISCO, CALIF.)

GLADYS HARDY

Miss Hardy exercising her horse.

I have always been a lover of the great out-of-doors—the woods, flowers and animals. I love them all, in fact, I have always felt like I was part of these wild things that God created for us. From the time I was a very small child I have longed to just go out into the woods and live where I could have all the animals around my cabin door. I love all animals and I can make friends with the worst of them without any trouble. In the spring when the trees are budding and the birds coming back, no one knows but a lover of Nature what a feeling comes over one to be just free, to go to the woods, lie under a tree or sit beside a rushing brook and hear the music of the woods. I had been working in a railroad office for several years and on such days I used to feel like that wonderful dog in Jack London's "Call of the Wild." So I felt the call for my woods. At last the call was too great, so I planned this trip, taking subscriptions for Outdoor Life. Next I wanted to get a girl to start with me. Several of my girl friends promised to go, but all got "cold feet" before the time came to start. Every one of my friends said I was just building air castles when I told them of the trip that I had planned. They said that two girls could never make it; they told me all the horrible stories of hold-up men, tramps, and in fact, everything that ever happened to anyone riding along a lonely road. Then when my girl friends backed out and I gave out the statement that I was going alone and make all my expenses en route, they threw up their hands in holy horror and asked me if I had lost my mind. Just the same I was losing a little of my nerve toward the last, but I made up my mind to show them that a girl can take care of herself as well as a boy. I am not a suffragette, nor even lean that way, but I know that any girl who has backbone or grit at all can make a living and make people respect her. I have traveled most all over the United States, Canada and Mexico. My mother and I have always taken our trips together on the train, so you may know what it meant for me to start out alone. Mother and I are great pals; we were never separated before until this trip. I used to get mighty blue sometimes; then I would get a cheery letter from her, saying: "Cheer up, Gladys. You went in to win. Now win, for I know you can." So I did and I have won so far.

Now I will give you the details of my trip from Spokane, Wash., to San Francisco. I left Spokane June 16, 1914, from the Spokane Chronicle office at

6:30 a. m. with $10.50 change. My first night's stop was at Reardan. I worked there one day and sold subscriptions enough to pay all my expenses without breaking my ten. I worked all the towns along the Northwest trail, for that is the route I took. At Coulee City I stayed several days, making an auto trip up the Grand Coulee to Steamboat Rock.

The prospectors' pack train.

My next long stop was made at Waterville. The big round-up was to open in a couple of days, so was invited by the round-up people to stay and ride. I met many fine people there and the cowboys treated me royally. I rode in two horse races, riding Mr. Pierpont's horses each time. Mr. Al Pierpoint is the oldest settler in that county and a great cattle king. I also rode in the big round-up parade.

The land from Spokane to Waterville is used mostly for wheat raising. There are many ranches having 5,000 and 6,000 acres in wheat alone. On leaving Waterville the pretty part of the ride commences. Wenatchee, a pretty little town noted the world over for its fine apples, is only thirty miles from Waterville. It was very warm, so I made the ride from Waterville to Wenatchee at night. From Wenatchee to Pershastine is like going down through a park driveway. There are trees and lawns on either side of the road with many beautiful farm houses. Pershastine is at the foot of Saddle Mountain. There is a ranch called Allen's Rest just a short way up the mountain, the last stopping place for travelers until you get on the other side. It was about 2 p. m. when I arrived at the Allen ranch. I was quite hungry and very tired and extremely disappointed on finding no one at home. It was too late to make it over the mountain that night, so put my horse in the barn and proceeded to make myself at home. I went into their cave and found some milk and cookies and helped myself. Then while waiting for the people to return, I took a nap on their hammock on the front porch. All I remember is getting "comfy" in the hammock until about 6 p. m., when I heard someone talking. I woke up and there were the Allen family home from town and wondering who I was and what I was doing there. It took me a second or so to remember where I was, but as soon as my wits came to me I told them who I was, and in a short time was most like one of the family. They all thought it was a good joke and said that they were going to charge me for two nights' lodging. I left there about 4:30 a. m. next morning, for I had a forty-mile ride to make over the mountain to Cle Elum. That Saddle Mountain is higher than any place I crossed in the Cascades and is a steady climb for eight miles. There are many fine trout streams, and it looks to be a very good hunting ground, with many ideal places for camping. When I reached almost the top of the mountain I found quite a weird place to the right of the road, it being an old grave, the headstone was of wood and had been carved out with a knife in the form of a cross. The man had been killed in 1892.

I arrived at 5 p. m. at Cle Elum. I had a nice collie dog with me that was given to me at a little town a short way from Spokane. He was stolen at Cle Elum and I never heard from him again. I left there in a few days for Easton. Easton is at the foot of the Cascades. It is a little place that can hardly be called a town, for there is just the post office, general store and

railroad shops there. I arrived about 6 p. m., too late to make any other town. I didn't see a hotel, so asked the postmaster where I could stay. He directed me to a private house where he said the lady gave good meals and had clean beds, so I went to the door and rapped. The day had been warm, so had my coat off, with my gun strapped to my side, wearing the cowboy hat. Well, she looked me up and down and all around. I guess she thought I had been lost from some circus or menagerie. Really, I didn't think I looked as bad as she seemed to think I did. I asked her about a room and this is the answer I got: "Get a room over the track or down to the N. P." The N. P. was a section house run by Italians, and the place across the track was worse, for it was run by dirty white people. I asked her what was the reason I could not get a room with her. Her answer was, "I am filled up"—and bang went the door. Well, I went over the track to the other place, the office was a dirty looking place, with part of a bar fixture for a desk, and a book, yellow with age, for a register; and to that was attached a stub pencil tied with a dirty string. The clerk came waddling in with a loose mother Hubbard affair on, an apron tied around her waist, if it could be called such, for the whole thing looked to me more like a sack of spuds. Behind the clerk came about six or seven young clerks with dirty faces and stockings down. All stood with open mouths when they saw me. I will now let you draw upon your imagination as to what the rest of the hotel was like after seeing the clerk. Oh, it is great to live in a small town.

I left there very early next morning, intending to make it over the Cascades. At Lake Keechelus the government is putting in a large dam. In doing so it has raised the lake to such an extent that it has covered the wagon road, making it necessary for all travelers wishing to cross the mountains, to ferry from the lower end of the lake to the upper. I could not get the ferry, so stayed for lunch at the government camp with some very nice young ladies I met there. Some of the gentlemen at the camp tried to get the ferryman for me, but he had gone up to the upper end of the lake with a load of lumber and would not return until evening. I wanted to make at least the summit of the mountain that night so asked the operator at the depot if I might ride up the track to Keechelus Station, five miles. He said yes, if I could get my horse over the railway trestles and through a snow shed. I didn't know whether I could make it, but took a chance. My horse didn't know what to think of the first trestle I took him over, but after that he worked fine; I didn't have any trouble at all in getting him through the snow shed.

The ferry was still in use when I reached there and could not take me over till 5 o'clock. One of the young men having a fifteen-passenger launch offered to carry my horse in it, if I could get him to climb over the railing and seats. There were some young ladies in the boat and when the horse put his front feet over it rocked quite a little, frightening the ladies quite

Miss Hardy and her chums.

badly. One fainted; so I had to wait until the ferry arrived. At last the ferry arrived and as luck would have it, sprung a leak and almost sank be-

fore we reached the opposite shore. There is a very beautiful summer resort on Lake Keechelus, so I stayed there several days before finishing my trip over the mountain. I left there several days late at 3 in the morning. It was drizzling rain and quite foggy. About noon it cleared up a little and the woods were wonderful. Being all wet with rain, they had a beautiful, clean, green color. These woods are the most beautiful I was ever in. The roads were very bad and in many places followed creek beds. Most of the roads are of corduroy and very much mutilated by the heavy logging wagons going over them. There are many bridges to cross, but they are so broken and torn up that one can hardly call them bridges. In many places I had to get pieces of poles and put over the holes so my horse could get over them. Also the mud was very bad and deep in many places where the trees and underbrush are so thick that the sun never gets in to dry it up. When I reached the summit the fog was so dense I could hardly see three feet ahead of me. About 1 o'clock I hit the Government road camp; they invited me to dinner and afterward sent me on my way rejoicing.

I made it into North Bend for sleeping quarters that night. Next morning I left early for Seattle, arriving there about 2 p. m. I spent two weeks in Seattle, taking in the Golden Potlach while there. At Tacoma was guest for one day at the Tacoma Country Club, of Mr. W. F. Sheard. Their club house is said to be the finest in the Northwest. I left Tacoma about noon and tried to ride to Centralia in one day, which is about sixty miles by the way I went. I took the wrong road so had to backtrack several miles. The day was quite warm and the roads had just been graveled, so it was very hard traveling for a horse. I rode until 11 p. m. that night, through the woods. I was getting very tired and was just dismounting to camp in the woods when I heard a team coming. I had an electric flashlight, so used it when they came close to me. Taking me for a hold-up man, they started to whip up their horses. When they saw that I was a girl they stopped and asked me what was wrong. I asked them how far it was to the next town and found it to be five miles. They invited me back to spend the night at their ranch, which was two miles. I was so tired that those two miles seemed like sixty to me. They live on quite a historical place, being that of old Linkletter, who came over and settled there with the Hudson Bay Company. He married an Indian woman and she would warn the settlers when an attack was to be made by the Indians. The old block house is still standing, where the whites went for protection. Linkletter, his squaw wife and slaves (that they brought from Canada) are all buried on the place, in the same plots. Linkletter and his squaw often went to town and engaged in very exciting times. One time on returning he lost her out of the back part of the wagon; some boys stopped and asked him what he had done with his wife; he didn't know, and on driving back to town found her lying in the road where she had fallen. Another very interesting sight on the place is a large oak tree with a pine rail grown in the trunk about five feet from the earth; some time when the trees were small the fence rail has laid against it, therefore making part of the tree. On leaving there about noon time the people gave me a small shepherd dog, which was run over on the way by an auto and killed.

I arrived at Centralia about 3 p. m. that afternoon; I spent a week there. It took me a week to ride from Centralia to Portland. About forty miles from Vancouver I had to ferry over the river. It was almost dark when I arrived at the ferry, and I had to ride down a deep, rocky cañon to reach a town for sleeping quarters. A man at the ferry gave me a little fox-terrier, so I carried her on the horse with me. It was very dark going down the cañon and my horse scared at a coyote or something and started to run away. I

arrived at the town about 10 p. m. The only light I saw was in a pool room, so asked them there where I might find a barn and a hotel. Three very gallant young men helped me to find a livery and got the liveryman out of bed. The hotel was about a mile down the road from the barn, so they all walked down with me. Everyone had retired at the hotel; the fellows holloed and whistled and at last the landlord came peeping over the banisters in pajamas and night cap. He greeted us with, "By gar, what's the matter with you all?" I only wanted rooms, was my meek answer. We could hardly keep from laughing, it was so funny to see him standing blinking at us. "Help yourself," was his reply, and away he went back to bed. I left a call for 3 a. m. on the register, took a lamp and proceeded to look for a room. After opening two or three doors I found one unoccupied.

Next morning at 3 a. m. I started for Vancouver, carrying the dog on the saddle in front of me, thirty miles. She was too small to keep up, so I sent her to Centralia to my little nephew. I spent several days in Vancouver, then left for Portland. The second day in Portland I was the guest of the Oakland and Portland baseball teams. I rode my horse out into the diamond; then all the boys of both teams took yearly subscriptions to Outdoor Life.

Now here's where a little hard luck came in. Next day I was riding for moving pictures when my horse fell on the wet pavement, smashing my foot. Two heroes rushed to my assistance and carried me to their machine and then to my hotel. I was laid up in Portland a month on crutches. Every one was very kind to be there. At the shows the ushers would always bring me cushions and a stool for my foot. Getting on and off the cars the conductors and the motormen would both help me. I want to say for Portland people that they are the most polite and considerate of any other large city I was ever in. On leaving Portland I was invited by the people of Oregon City to stay and open the street carnival. I did so by leading the parade with Harry L. Young, one of Oregon City's prominent young men.

At Salem, Oregon, I rode my horse up the Capitol steps to greet Governor West of Oregon and Mayor Steeves of Salem, and I want to say that I like them both mighty well. Governor West rode my horse through the State house from front to back; then I led him in the elevator and took him to the first floor and out through the corridors to the front of the building, where Governor West mounted again and posed for his picture. The Shaffer Saddle Company made the rubber boots for my horse to climb the steps, as it had been raining and the steps were wet and slippery. From there I went on south.

My next experience was climbing the Cañon Mountain while at Cañonville. About noon time on Oct. 2 I rode into the little town of Cañonville, Oregon. It is surrounded on all sides by high mountains and peaks. One peak I noticed in particular on account of its height. On asking at the hotel was informed it was the noted Cañon Mountain, where sportsmen came to get good deer and bear hunting. Then they started telling me all kinds of big game stories, which got me very much excited for a hunt. I had never seen deer in their wild native state, so decided, about 3 p. m. that afternoon, to climb the mountain. I carried a small revolver on the road, so buckled it on and started out with my two dogs, Husky and Ivan. I could not find a trail, so climbed straight up. It was very steep and in many places I had to pull myself up by the brush; once a piece of brush gave way with me and I rolled down the hill about five feet, and hit a stump. That was the only accident I had. On reaching the top I fired my gun several times just as a salute. I found a trail going down the mountain, so reached the hotel about dark, very much disappointed, tired out, and soaking wet, for a storm came up and I could not find a place for shelter. The lady at the hotel was very kind to me,

loaning me dry clothes to wear that evening. I did not even see a rabbit on the mountain, so was quite disappointed after all the hunting stories they had been telling me.

Next morning while saddling the horse at the barn, getting ready to leave for Glendale, I met two prospectors there who were packing their mules to return to the hills. They had been in Cañonville several days for supplies and were going my way, so we all left town together. They walked and herded the mules. Both invited me to stay with them until noon time and have a venison dinner in the woods. That surely sounded good, quite good sport, and an adventure, I thought. The road is very steep from Cañonville to the summit. Cañonville is 760 feet in elevation and it is 2,046 at the summit, making an ascent of 1,286 feet in four miles. I am a good hiker, so walked to the summit with them. About noon time we pitched camp for dinner. Everyone works in camp; I unsaddled my horse, and brought the water from the river for coffee while Mr. Bean unpacked the mules. Mr. Durgin cut the wood and built the fire. Both the fellows cooked the dinner over the campfire while I sat and looked on; they also told me hunting stories, which made me want

Miss Mamie Clements, who took the author on a deer hunt.

to hunt worse than ever. After eating their fine dinner of venison (for they both are good cooks) I bade them good-bye and galloped off for Glendale.

While riding along a lonely road within ten miles of Glendale I heard a horse galloping behind me. I turned and saw it was a young lady, so stopped and waited for her to catch up. "Hello, where are you going?" was my greeting to her. "Oh, down the road a ways," was her reply. "All right, come along and I will ride with you," I said. So she did. I told her my name was Gladys Hardy, the Outdoor Life girl, Spokane to Frisco on horseback. She was Mamie Clemments of Glendale, Ore. She had just made the ride from Eureka, Calif., to Glendale alone, 235 miles, in five days, on her horse Montie. When we met she was just returning from a deer hunt on her father's homestead at the head of Cow creek, which is about thirty-five miles from Glendale. I asked her about the big game I had heard of, and if it was really so about there being so many deer in the Oregon woods. "Sure," said she. "I just killed a big buck myself on my father's place." About that time I was getting so excited I could almost see deer in every clump of bushes on the hillside.

Tuesday morning, Oct. 6, about 11 o'clock, we started for the hills. Mamie's father, S. R. Miller and brother Blake rode in the grub wagon. We followed horseback with the dogs. Half way we made camp, built a fire and had dinner by the roadside. The road from Glendale to Halfway camp is dandy. From there on it is quite rolling, in fact, the last five miles is more than rolling, just a new-cut trail with stumps and ruts and many creeks to ford. One place is called the Loop-the-Loop, and it surely is some loop, more so in the dark. The road is quite rough, but the woods are beautiful. The moon came up over Red Mountain about 9 p. m. It was a very beautiful sight as it came up full and round, the sky clear and the air just sharp enough to make one feel fine. We could only get a glimpse of the moon now and then through the trees, giving the woods the appearance of a fairyland. We arrived at camp about 10 p. m. The cabin was

a large two-room affair with a big fireplace in one end of the living room. Jess Clemments had a fine hot supper ready for us. I will say for him that he is a splendid cook. We gave him the name of Hop Sing.

Next morning I was up at daylight ready for the hunt. Jess went for a hunt on Skelton Butte; Mamie Blake and I took Panther Peak. We hunted until noon and had the usual hunter's luck; didn't even see a deer. While we were gone two of our pack horses got away, so we had to hunt them in the afternoon. We hunted them until dark, and I guess they were hiding with the deer, for we could not find them. Next morning we three started out on our horses for Red Mountain. We took Blake's bear dog, Dan, with us to trail the horses. The trail up Red Mountain is very steep and dangerous. In many places we had to walk and lead our horses. We tied them about half way up and started on foot. We were climbing around the mountain side when four deer jumped up. Not being used to climbing, I could not keep up with Blake and Mamie, so was a short way behind. Blake did not want to shoot until I had seen the deer and taken a chance shot myself, so called for me to hurry. When I saw them I guess I got the "buck fever," for I dropped my gun and stood there shouting, "Look at 'em go." We saw quite a number of deer that morning, but most of them were too far away or were does and fawns. About noon a fierce storm came up. We reached our horses before it was at its worst, but couldn't make camp, so took shelter in a deserted cabin. I unsaddled the horses so they could get on the porch out of the storm. We built a fire in the cabin, found a half sack of potatoes and several sacks of stock salt. I threw a lot of potatoes in to bake, and I want to tell you they tasted mighty good, even if we did have to use stock salt on them. We had to stay in the cabin about five hours, reaching camp at dusk. About 6:30 Jess and Mr. Miller came in with a five-point buck from Groeulaway Gap. They also were caught in the storm, but found a cabin for shelter.

Miss Hardy in hunting clothes.

Mr. Miller is quite a character himself. It would do some of your old hunters and trappers' hearts good to have an old-time fireside chat with him. He has been hunting, trapping and acting as guide for hunters in these woods for the past eighteen years. Saturday morning Mr. Clemments and I climbed the Skelton Butte. It was raining and one had to almost swim to the brush. I wore overalls and a hunting coat, for it was impossible to get through the brush in skirts. We hunted until noon, but didn't have much luck, and we came back to camp for lunch and dry clothes. After lunch we all started for Panther Peak. We stationed ourselves on different points of the mountain while Mr. Clemments came through the brush up the gap. When the deer start-

W. H. Redfield, the oldest hunter and trapper in his section of Oregon.

ed for the mountain sides we all took a few shots. Mr. Clemments got a five-point buck, and I wounded a two-point buck. He followed him a ways and gave him the fatal shot. My shot caught him on the left shoulder; was using a .38 and took four shots. It is a very pitiful sight to see them fall, then to cut their throats. The boys cut the feet off and gutted them, tying the strips of skin left from the feet and legs together so they could carry them on their backs.

Next morning Mamie and I put on our packs and started for Glendale. On the way down we had dinner with Mr. Redfield, the famous hunter and pioneer of that country. About dark Mamie and I were riding along the road when we saw something black in the road. The horses began to snort and the dogs to crouch down. When we got closer we discovered it to be a small black bear. I took a couple of shots at it, but it was too dark to see clearly. He took for the brush and showed fight with the dogs, and growled at us. We arrived back at Glendale at 7:30 that night, dead tired after our week's hunt. I left Glendale next morning about noon. Mrs. Clemment rode a ways with me. We had been good friends, so hated to part.

From Ashland I started across the Siskiyou Mountains. It had been raining and the roads were very muddy, the mud being of thick clay and very slippery, which made traveling very hard and slow. It was almost noon before I reached the toll gate at Siskiyou. About 1 o'clock I reached the Siskiyou road camp and was invited by the office men for dinner. Mr. Johnson, one of the timekeepers, helped me get over the new highway from Siskiyou to Hilt, it being eight miles shorter than the old road. The highway is under construction, so it was necessary in some places to jump my horse over ditches that they were working on. One was too wide and Mr. Johnson had the men build a two-plank bridge for my horse to cross on. It took me eleven hours to make the eighteen miles from Ashland to Hilt.

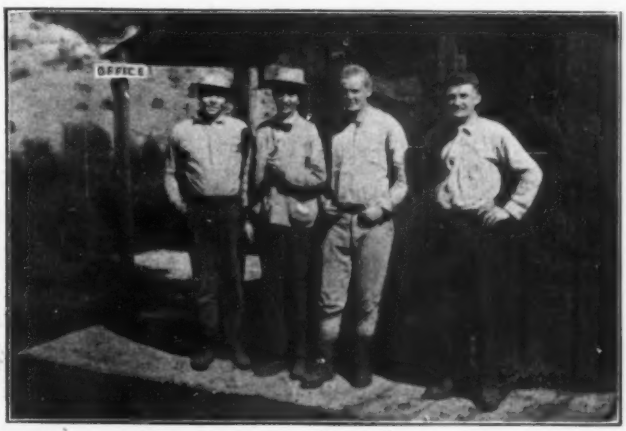
The scenery in the Siskiyous is quite beautiful, especially on the new highway from Siskiyou to Hilt. Mt. Shasta, Ashland Butte and many other points of interest may be seen from the road. Was quite disappointed that the Siskiyous were not as wild as I had pictured them. In wildness they can't be compared with the Saddle or Cascade mountains. At Shasta Springs I stopped for a couple of hours, walking down the trail to the Soda Springs. I took a number of pictures of the many beautiful waterfalls there. The trip from Portland to Red Bluff is most all

mountains and forests, with lots of bad, rocky and steep roads. From there to Willows it is mostly level on the west side of the river. I only stopped at each town long enough to work my subscriptions between Glendale, Ore., and Corning, Calif. At Corning I was feeling a bit under the weather, so stayed there several days. W. N. Woodson, the father and founder of Maywood colony, and some friends took me for a long auto ride showing me the surrounding country. Mount Lassen can also be seen very distinctly from Corning, as well as from Redding south to Willows. At Cottonwood, several miles north of Corning, I saw an eruption.

I left there next day and while on the way from Orland to Germantown took very sick. There are not very many ranches along the road, so asked a man passing how far I was from a ranch. He told me it was about two miles to the (I will call it the Rehse ranch). I had such a pain in my head and couldn't stand the jar of the horse; almost fainted on the road. I took my raincoat and put it down on the roadside in hopes that someone would pass and take me to town, but no such luck. When I got to feeling better, I walked to the Rehse ranch. These people are very wealthy and have a very large ranch. I didn't have a doubt but what they would take me in for the night, for most of the farmers are very kind that way. Only the daughter-in-law was at home when I arrived. She was very kind to me, putting my horse in the barn, and let me lie down. She said the old people were (using the slang for it) "crabs," and she didn't think they would let me stay, but I thought they would when I was so sick I could hardly move. Anyway, when they arrived home the madam informed me that she was neither running a hotel nor a hospital; so I was invited to move on. I offered to pay them well to keep me over night, as I was not able to ride to town. They having an auto, I offered to pay them to take me to town, five miles, to a doctor, but had the same luck in that. About that time I told the mistress how mean I thought she was, and you may be sure I did not wish her any good luck. Anyone that would turn a sick person away under such circumstances ought to be ashamed of themselves, but I am sure it will all return to her tenfold. The daughter-in-law was very fine; she went to a neighboring ranch and got a young man to drive me to Germantown. From there I hired a livery rig and was driven to Willows. On arriving at Willows the doctor said it was just a nervous breakdown, so have been laid up here all week.

During my last day at Willows I was guest of the Teal Gun Club at a duck shoot. My first duck shooting was not so successful as my first deer hunt. But I enjoyed it immensely. The Teal club consists of fourteen jolly good fellows, all true sportsmen.

At Winters I was guest of Mayor Judy and several other prominent families. Mr. and Mrs. Judy spent the afternoon that I was in town showing me some of the beautiful ranches and



The young men at Siskiyou road camp.

At the World's Fair City.

homes in and about Winters. At one beautiful home I saw the largest rose bush in the world. The branches start ten or twelve feet from the ground. The trunk is 42 inches in circumference and measures 44 by 56 feet over the top. One hundred people can easily sit under the arbor.

For a Thanksgiving gift the people I met there presented me a large box of assorted fruits and nuts. The California Fruit Association of Winters presented me a fancy box of their choice dried fruit.

On Saturday evening, Nov. 20, I landed at the ferry building, San Francisco. Saturday evening about 6 o'clock is San Francisco's busy time. The streets and sidewalks are blocked with traffic. Goldie, my horse, is very high of life and does not care a little bit about boat riding. When I led him off the ferry I had a hard time to keep him from doing the tango all around the ferry building. It is no little job to handle two large dogs and a wild horse in a crowd, so you may know what a time I had before I reached the street. There I hired the first expressman I saw to put my dogs in the wagon and tied my horse behind, for I knew I could never manage them on Market street in the crowd. The pavement is very slippery at that hour when the fog comes down. My horse was not rubber shod so I was afraid to try riding him down to the Chronicle office, where I was to make my landing. After my accident in Portland while riding for the movies I don't just enjoy pavement riding. Mounting the seat beside the driver we started up Market street; but we only went a few blocks before Goldie became frightened, broke loose and ran up Market street on the dead run. The driver dropped the

Miss Hardy and two of her pets at San Francisco.

reins, jumped out and started after him. Also several mounted policemen joined in the chase. After a six-block run they caught him. It happened on

a cross street. I was so frightened for fear my horse would fall, break his leg or get killed that I didn't think about picking up the reins and driving on, but just sat there blocking all traffic. At last the traffic officer stepped up and asked me where I was from, and if I came from the country. I was so mad I snapped back: "No, I came from Spokane!" He was very nice about it even though I did speak so saucy, and asked me if I could drive or if he should lead the horse out of the way. I picked up the reins and started up Market street, driving the old horse that I think must have been an heirloom, for he just seemed to crawl along. I didn't stop to think how really funny I must have looked, perched up on the express wagon driving that bony old horse with several trunks and two dogs in the back, until a couple of young men on the street said to me as I passed: "Hello, sister, where you going?" I came to with a jolt at that, and when some of the by-standers started to laugh it made me furious. At last I reached the spot where my horse had been captured, and I was mighty glad to find him whole and not in pieces. Fixing up the reins which he had broken, I mounted and tried to ride him up the street. He walked on his hind legs most of the way up Market street.

After an interview with the Chronicle people I registered at the Turpin hotel and was cordially received by Mr. Turpin and his employees.

My next story will include my stay in Frisco and my trip south to Los Angeles.

The Line-Rider's Soliloquy

Have you ever been out where it's lonely—'way out in some desolate place,
And stayed there for months without havin' one glimpse of a welcomin' face?
Have you laid there at night in your cabin, with nary a sound to be heard
But the yappin' and yelpin' of ki-yotes, or the cry of a nocturnal bird?
Have you lived with the wildness of nature until you'd have walked forty miles
Just to hear but a laugh or a whisper, or to see a face wrinkled in smiles?
If you have, then you know of the comfort, the joy and the gladness 'twould bring
When you'd sit there alone in the silence, and let the ol' phonograph sing!

You strangers who live in the cities, with all sorts of comforts at hand,
You joke at my manner of talkin'; you smile—but you can't understand.
You scoff at my praisin' canned music; you tell me it rasps on the ear,
But say—have you lived on the ranges—'way out—without nobody near?
Did you ever bunk nights by your lonely—not even a dog by your side?
Have you shouted across the bare stretches when only an echo replied?
Then you know how your soul slipped to heaven—how tears to your eyelids would spring,
As you'd sit there alone in the silence, and let the old phonograph sing!

Perhaps 'twas the voice of a woman a-singin' a lullaby fair,
And the melody—how it uplifted, and soothed you, and comforted there!
And maybe a song of some sweetheart you knowed years before, went afloat,
And mebby your lips was a-quiver, and mebby an ache in your throat!
Perhaps 'twas a song that your mother would sing as you knelt at her knee,
And mebby it brought you a vision of a face you was longin' to see!
What memories drifted before you! What fond recollections 'twould bring,
As you'd sit there alone in the silence and let the old phonograph sing!

No use, pard, you can't understand it until you have drifted away
Where nary a face passed your cabin—and you all alone, night and day!
When 'twas so infernally lonesome that even the bawl of a steer
Would a-sounded like music from heaven, if it could have fell on your ear!
And then, when the stars blinked above you, and stiller and stiller 'twould seem,
With nothin' to do only drowse there, a-smokin' and dozin'—and dream!
Say, pard, what a hush seemed to hover around that old cabin, and cling,
As you'd sit there alone in the silence, and let the old phonograph sing!

E. A. BRININSTOOL.

DETACHABLE ENGINES FOR SMALL BOATS

CHAUNCEY THOMAS

Ready to hitch "four horses" to that boat.

Outboard motors is the name used for small gasoline engines that can be attached to any small boat, and then detached and put away in a safe place when the sailing trip is over. Practically everyone is as familiar with the ordinary motor boat as he is with the automobiles that chase us in the street, but the outboard motors are not yet so well known, although they have been on the market in various forms, mostly experimental in the beginning, of course, for the past twelve or fifteen years.

Within the last four or five years, however, the outboard motor has become a reliable success and ranks on the water somewhat with the power-driven bicycle on land, compared to the automobile. In other words, the regular motor boat, with its built-in engine, is the automobile in water while the outboard motor is the motor bicycle afloat. Larger boats and ships correspond with the railroad train, of course.

The outboard motor for boats has about kept pace in its development with the land motorcycle. This illustration is here used for the sake of clearness for those inland people who, while perhaps unhappily familiar with the motorcycles bursting around the corner, are not yet acquainted with the self-propelled canoe or small one, two or three-man boat.

As just mentioned, the difference between the ordinary motor boat and the boat with an outboard motor is that the outboard motor can be taken off the boat in a few minutes, packed to the next lake or river by hand, stored away in a safe place in the house or tent where it is secure against thieving or monkeying hands, or it can be attached to another boat, or even to a handcar, railroad bicycle. In addition, with a few special inexpensive attachments, the outboard motor can be used on land for any purpose where any other engine of its power can be used, and where gasoline can be had.

To illustrate: A motor boat is, of course, in one piece, as a rule, with a built-in engine, and, depending on the size and strength of the boat, weighs, with its motor, anywhere from 500 to 1,000 pounds. This makes portage, except with a wagon and several men, out of the question. It is not practical to ship such a boat except by rail or on

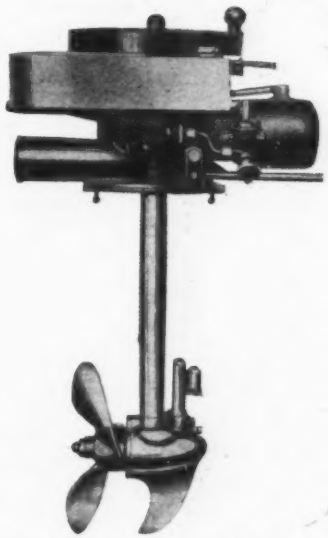
board ship, unless knocked down. And that means considerable skilled work at the end of the shipment setting up the boat, and not a little expense and risk of many things going wrong. While the built-in motor boat is of course, a decided success, like the automobile on land, it is not exactly a portable proposition.

On the other hand, the outboard motor's big bid is that it is easily transported, even in the wilderness, and by one man. Outboard motors weigh from fifty to one hundred pounds, depending on size and make, and develop from two to five horse-power, also depending on size and make. In some cases the larger and more powerful outboard motors, the 5 horse-power, 100-pound size, will drive a specially built, light boat as fast as twenty-five miles an hour. This speed of course is only for the racing expert, as it is not a safe speed for the unskilled to attempt, yet it illustrates what an outboard motor can do. Then the man can unscrew his

A type in 3 h. p. noted for speed.

little demon of an engine, pack it by hand, or on his back, to another boat or lake, or even check it as baggage.

The smallest outboard motors, weighing fifty pounds and of about two horse-power, will drive a twelve to fifteen-foot row boat or canoe from five to ten miles an hour in still water, depending on the boat, engine and load,



Detailed drawing of a well-known motor.

of course. In other words, fifty pounds of outboard motor will do the work in a boat of more men than the boat itself can float. It is doubtful if five or six strong men in a row boat can develop two horse-power with oars, under ordinary every-day conditions. We are not speaking of the racing shell here, remember, but of the average row, pleasure, hunting and exploring boat.

Two or three men in a boat with a suitable outboard motor can ride at their ease, smoke, loaf and admire the scenery, or fish, while ascending a current that without the motor the whole three could not pole, to say nothing of rowing, the boat.

This means that the party can easily go up a river with the motor where without the motor they could not get up at all, if the river was too deep to pole, and the banks unsuitable for hauling with a rope from the bank. The difference of a 50 to 100-pound outboard motor, under such conditions, means giving up that particular river entirely, or many weary miles of portage, to say nothing of the expense and delay.

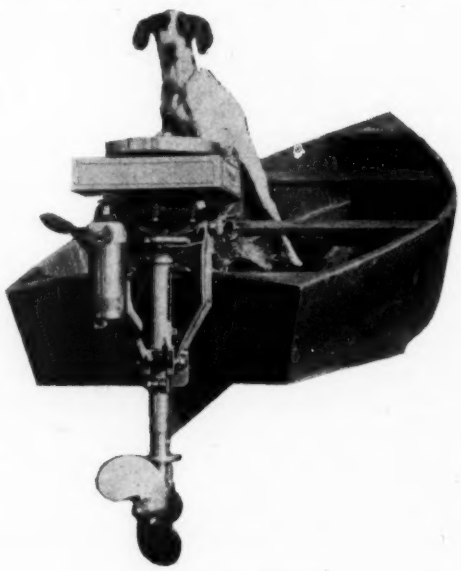
Showing engine, screw, rudder and boat clamp.

Another of the many uses of the detachable outboard motor for boats is that with it one man can handle a boat totally out of the question for him to manage alone with oars. In this regard the outboard motor corresponds somewhat with a sail compared to oars. Some of these little motors are pushing boats weighing, including boat and load, up to four or five tons. They are used even to drive small log rafts and large house boats in waters where there is not too much current or adverse winds. They run practically without noise or vibration, but of course are not as silent as the paddle. They make less jerk and noise than ordinary oars.

A good outboard motor will last for years, if given ordinary common-sense care. In short, they will last like any other engine of its kind, and cost the same to operate and keep in repair.

Some motors for some boats need only to be clamped to the stern of the boat, although as a temporary makeshift they can be clamped to the side. Other makes require some alteration of the boat itself, such as a few bolt holes here and there, and in a canoe most motors require that a hole, with a water-tight cap, be cut through the bottom. The canoe and other boats with only a few inches of draft make it necessary to have the screw of the motor beneath the bottom to get sufficient depth to operate. This does not materially increase the draft of the boat or canoe, as the motor is so arranged to tip back out of the way when the boat passes over some obstruction. But for any outboard motor there should be at least one foot of water beneath the keel, as no motor can operate practically on the surface any more than an automobile or motorcycle can run without a road. You do not expect the automobile to climb rocks and jump gullies like a horse, so do not expect the impossible of the outboard motor.

Outboard motors are made and used today all over the world. None are better, and none are used in more foreign lands, than the motors made in America. In this the outboard motor



Dog-on easy rowing.

is like the American engine on the rails, pumped tires, in factories—no nation builds a better engine than America nor a better outboard motor.

Various makes of these little detachable motors vary just like various makes of any other machine, such as bicycles, guns, sewing machines, automobiles or typewriters. They are all made on practically the same general model, a small gasoline engine clamped to the boat, driving a screw beneath the water. They all have several speeds forward and backward, etc., just like the ordinary automobile. Of course the various makers and agents strive among themselves just like the makers and agents of anything else, but if you buy a good motor from a good maker, from 2 to 5 horse-power, weighing from 50 to 100 pounds, and costing from $50 to $100, and treat it with ordinary care, you cannot lose.

The row boat is the push cart; the outboard motor for canoes and small boats is the automobile of the water, but one that you can take apart in five minutes and pack in your hand to the next landing. When done with it for the season you can check it home as baggage, if put into a specially built case or small trunk, and at home you can then put it away in the closet till next time.

In short, the outboard motor is to boating what the tent is to the rented cabin, the motorcycle is to the horse,

Sixteen-foot steel boat—ten miles an hour.

or the automobile is to the railroad train, and is as far ahead of a rowboat as a rowboat is ahead of a raft.

The Trout-Fishing Cranks

Fishing, fishing, fishing in the shaded mountain brooks,
Wishing, wishing, wishing for a nibble at your hooks;
Lounging by the campfire, watching the birds above
Flitting through the foliage, singing their songs of love;
Winking, winking, winking at the sunbeams streaking down,
Thinking, thinking, thinking of the pleasures out of town.

The stew pot's bilin' and the contents you can tell
By the risin' of the dumplin's and their appetizin' smell.
The fryin' pan's a-singin' and its contents you can guess;
The coffee lid's a-jumpin' and you'll circle 'round the mess.

Then you throw away your felts and you squat beside the spread,
And you loosen out your belts 'fore the last word has been said.
When you've finished up the stunts and you've wiped the tinware clean,
With most satisfyin' grunts you will stretch upon the green.

Beaming, beaming, beaming with expressions of your joys,
Seeming, seeming, seeming just as happy as some boys;
Loungin' by the campfire, tellin' the old, stale jokes,
Lighting up the briars for good old-fashioned smokes;
Sleeping, sleeping, sleeping, you go dreaming all about,
Leaping, leaping, leaping of the speckled mountain trout.

ADDISON POWELL.

CAMPFIRE TALKS

By CHAUNCEY THOMAS

No. 37—Peas

'Tis an ironical paradox that the Law of Breeding should have been discovered by a monk. By a monkey would not be so strange, but a monk—that is one of the things with which a black, silence-frozen Fate loves to tease man. Mendel was his name, and he lived in Austria about 100 years ago—he and his sweet peas. For centuries the monks had been putting peas in their soup and in their shoes, the first for the good of their bodies, the second for the good of their souls—if not soles. So read the stern measures dished out from those higher up to some offending monk, peas in his shoes for a week. All of the monks obeyed, of course, but the wiser ones boiled theirs, and so did not limp. Evidently Mendel buried his dried peas, at any rate he had a garden and in that garden grew sweet peas. And in that sweet pea bed, in that monk's garden in Austria a century ago, sprouted something that in time was to make the horse and wheat native to America, was to make many men famous, such as Burbank and Stockard, gave a foundation to the so-called science of Eugenics (the breeding of better humans); in fact, the discovery of Mendel's bids fair in time to rival the results of Newton. One dealt with the machinery of the world, the other with the plants and animals—including man—of the world.

Till Mendel, and mostly since, the laws of inheritance had been left largely to horse breeders and old women. Awfully and terribly made were the perfectly truthful and dead sure things the women folk whispered to each other, all of which is now on the junk heap, and tossed there by a monk. But like many of the greatest things in the world, and greatest men, too, Mendel's little book about his sweet peas lay in dust and forgetfulness till long after he himself might have been a great-grandfather. Today every man knows of Burbank, probably the greatest man in America, if we apply the only known test of greatness—the final effect throughout all time to come of his work. But there would have been no Burbank if there had been no monk named Mendel.

Even now we know but little about the laws of breeding, but we have made a splendid start; we are on the right trail. But this in general we do know, that the young is more a bundle of its ancestors, many generations back, a little from this one and a little from that one, good, bad and indifferent, than it is a two-fold mixture of its parents. In other words, a boy may be totally unlike his father and his mother, have practically none of their distinguishing characteristics any more than the boy across the street has, and this same boy will "throw back," to use the good old term in such cases, to his great-grandfather, and to his grandmother on the other side. In short, that that boy is not so much the child of papa and mamma as he is the child of dad's grandfather and mamma's mother. All the parent does, it seems, is merely to pass on certain characteristics, some or even none of which they may have themselves. For instance, two white birds, or peas, very often bring forth colored young, and from the colored young and their young on down will ever again come a white bird, or flower, as the case may be.

The reason is this: Two cells meet, male and female, and form a third cell. The third cell is the young. We are now down to the cell, remember, and on purely mechanical grounds, regardless of whether the cell came from the human or any other animal or from a vegetable growth. The action of the cell is practically the same, as the animal and vegetable, much less the human, classifications do not apply to the cells from which each is made. In other words, a man, a dog and a tomato are all different from each other, just as the army, the navy and the national guard are different, yet the same cells make the man, dog and tomato just as the same men make the army, navy and national guard. It all depends, that is, on how the same things are arranged. The letters, to use another illustration, on this page correspond pretty accurately with the letters on the next page; each page is made of the same kind of things; the only difference in the pages is the arrangement of these same letters. So with cells in man, animals and plants. 'Tis all the same protoplasm cell, remember. Man is no exception in the least. I often look at a lovely woman, a great man or a still-warm corpse, and say to myself: "Only a hundred and fifty pounds of protoplasm." It tends to keep one's head level.

Now, back to our two cells once more:

"Male and female made He them." Perhaps. Except that cells have no sex; only the capacity to turn into this sex or that, or neither, depending on circumstances. For instance, it seems that in each cell from the female is a certain speck. It is always there; otherwise the combined cell produces no sex. It may die, or may produce a neuter. Now, in the cell from the male we may or may not find a similar speck. If two cells with specks unite, then the young is always female. But if the male cell—so to speak—has no speck, then the combined cells produce a male. That seems to be all there is to which sex it will be—boy or girl. True, feeding the parent in a certain way may tend to produce these specks in the male, but of this so far we have no evidence. But one thing seems reasonably sure—nothing we could possible do to the female would in the least effect the sex of her young. In short, the father determines the sex, not the mother. And that is a long way on the road to breeding, but it is only a step of the way laid out by that sedate old monk, Mr. Mendel.

Now, why cannot a cow cross with a horse, or an animal with a plant; and, incidentally, all this jabber about crosses of man with other animals is nothing but old-woman talk—such a thing has never been known in the world. The gorilla is our only hope, and gorillas are not available. Like ghosts, fairies and other mental spooks, a real live—or dead, either, for that matter — case would make the discoverer immortal, and he could sell it to any of the great and rich universities for half a million dollars, cash down. Of course we all know—"over in the next county, when I was a girl, my sister's cousin's third wife, etc., etc., buz-z-z-z——" All of which is not so. We knew it was not so, at least intelligent men did, for many years back—several centuries, in fact; but not till Mendel did we know why it is not so. The answer is—cells.

Cells when they developed break up, so to speak, in a certain way, and in always the same way. The cow cell breaks into three divisions, for instance—using round numbers merely to illustrate—while the horse cell first breaks into four parts. Now, if any part in either cell has nothing to combine with in the other cell, that poor old maid part gets discouraged of ever doing anything in the world, of having no career, so to speak, and dies of loneliness and unrequited love. And when there is something dead around in the combined cow-horse cell, the whole cell naturally dies; hence we never have a horse with horns on it, with no front teeth, and split hoofs in front and whole hoofs behind. Fancy the thing—horse on one side and cow on the other—the backbone dividing the two animals. Nothing doing, even if Grandma does set her lips and shake her head with great determination. She knows absolutely nothing about it, and can tell nothing definite whatever, only vague things that she "has heard" or "believes." And there is no limit to what old women hear and believe. Only that doesn't interest us here.

Now why are two brothers so unalike, though from the same parents within the two years? The answer is again, the division of the cells at the very start. Going back to our cow-horse cell for illustration. Say we change the case to two horse cells combining. Each splits into three parts, for instance, and we will name these parts in each cell A and B and C. Now, A splits into four parts, say; B into nine parts, and C into three parts. And each of these parts in turn splits into other subdivisions. But while the opposite cells in the beginning have to have the same number and kind of divisions when they develop, this necessity wears away as we get down farther and farther into the subdivisions and resubdivisions. For instance, male cell division A may split into only two parts—1 and 2 and 3—while female cell may contain all four subdivisions—1, 2, 3 and 4—or again only 2, 3 and 4. Now, in any stage of the cell, like must attach itself to like, roughly speaking, so in the first case the combined cell would result of A-1, 2, 3, as 4 would die, but would not kill the whole cell any more than a man can lose a finger or a leg and live, but cannot lose his liver or heart. He may even lose a part of some vital organ and live, as the brain, but not all of it. So the cell can lose, or have die, No. 1, or 2, or 4, for instance, but not the whole "A."

Now these divisions of the cells goes on down to the final stage where organs begin to form in the now greatly enlarged cell, and each division and subdivision always developes into the same organ, muscle, bone, etc. I have seen Stockard make fish grow together like grapes, and he can make the fish have an eye in its tail just as easily as not. At the right time he simply transplants a certain part of the cell to another part; in short, he puts the eye-seed into the tail, where it grows and becomes an eye. But 'tis not much of an eye after all, as it is not able to see anything, not being connected with the brain.

Another thing: Going back to division A and its four subdivisions. All the subdivisions in any cell cannot go on developing; one must die out. The survival of the fittest seems at work in the minute cell from which you and I came, just as it does in a saloon or an international row. Now, each subdivision of the cell determines the shape, size, location and hence characteristic of every part of the human or other animal, or plant, body. Hence our characters differ so, simply because our bodies differ so. Given two men with exactly the same bodies down to the composition of the protoplasm of each cell, and they would be exactly the

same man, just like the same letters arranged the same way make two pages exactly alike.

You see Mendel started something. And this is not all, by any means. I cannot tell you all here for two reasons—lack of space, and I don't know about it myself. 'Tis hard enough to crowd in here in every-day words even a part of the small fraction that I know about this monk Mendel and his sweet peas—just a handful of dried peas—and a brain. In fact, there are more peas in the world than there are brains. Like the man who was arrested because his dog bit another man. "Your Honor, I have four separate and distinct defenses: First, the man wasn't bitten by anything; second, it wasn't a dog that bit him; third, the dog that bit him wasn't my dog, and, fourth, your Honor, I haven't any dog."

So for various reasons—after this little mental vacation—we will have to forego here many things about the monk and his peas. Anybody thinking of raising children—or peas—can find plenty on the subject in the public library. Better read that than listen to wise old Grandma, or spend money on pictures of beautiful women, so when your daughter comes it will look like 'em and be beautiful, too. It might be a boy, by the way. And if there was anything in such poetic nonsense, then all babies would be green, most likely, with large sunsets on their left cheeks, etc., instead of strawberries, mice and other fanciful discolorations. Strawberries have appeared on children for centuries in countries where no one ever saw, or even heard about, a strawberry. The shape and color happen to be more or less alike, that's all. So look at what you please, dear coming mother; it won't affect you or your young in the least, be it flowers and sweet music, or hog butchering and a glue factory. The cells have neither eyes, nor ears, nor noses, and you have no more connection with the young within you than the Pullman car has with the passenger. The passenger sleeps and eats there, but the steam that heats the car does not enter his veins in the least, nor does your blood ever enter the young. You are but the carrier and feeder, like the Pullman car, that is all. Not one drop of the mother's blood ever enters the young, any more than the father's blood. 'Tis much believed, this fairy tale, but 'tis not true. Ask any doctor, and he will tell you the same thing. Gone is another romantic illusion, and I have seen so many of them crumble that the very word "romance" gives me a pain.

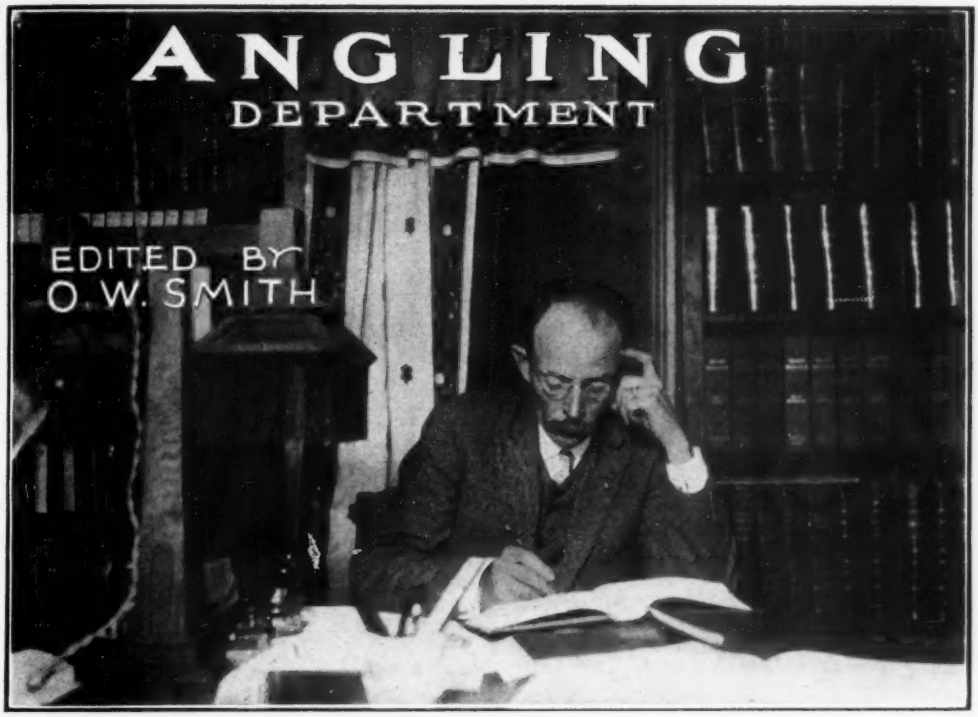
But let's say good-bye here to Mendel and turn to something real fashionable—ancestors. Now, if you boast about your ancestors, then naturally they were better and greater than you are, or you would not boast of them. Hence the family is degenerating, going down hill. On the other hand, if the family is coming up, Grandpa picked rags, Dad drove an express wagon, and you are a bank president—Ahem! Well, who ever heard of a bank president boasting of a ragpicking grandfather.

You have all heard of the tale of one grain of wheat on the first square of the checker board, two on the next, four on the next, and so on till you got to the sixty-fourth square. Not enough wheat in the world since time began to fill that last square on the checker board. The same with ancestors. You have two parents, four grandparents, eight of the great variety, sixteen of the great-great kind, and so on back, doubling each time. The family name is simply following one edge of the wedge, and does not take in the whole piece of pie, remember.

And in each family, when we take enough ancestors to make the law of averages workable, we find the same proportion of generals, drunkards, saints, thieves, nuns, pickpockets, senators, prostitutes, dukes, idiots, rich and poor, wise and foolish, great and small, good and bad. In short, each of us has the same kind of family. Any one of us has to go back only from four to five hundred years and we have more direct ancestors than there are people in New York city, or something like 5,000,000. And you are related to each one of these five millions just as much as you are to any of the others, or to all of them.

You may have fine parents and be a bum yourself, with no blame to them or to you, because you were born that way; or you may, like Lincoln and many great men, have practically worthless parents and yet become the great of the great, still with no credit to your parents or to yourself, simply because of the combinations of qualities in you from many mixed ancestors—qualities and combinations over which you nor any one had no control whatever, as they are due to the various divisions and subdivisions of the two cells from which you sprang. Let the combination be only an hour sooner or an hour later, and you would have been some one else, not you as you are today. Even your sex would probably have been different, to say nothing of your eyes, hair, height, health and brain.

Success in life, be it for man, animal, insect or plant, depends but little if anything on himself, but does depend largely if not entirely on four things over which he has no control whatever—luck, opportunity, health and ability—and the greatest of these is luck. What man picks his parents? his nationality? the color of his skin? the age or country in which he is born? his education? These are all a matter of luck, be it good, bad or indifferent. The two greatest factors in a man's life are his birth and his death—and he can control neither. 'Tis mere chance—Fate, Kismet—call it what you will. The scientist calls it Mendel.



Angler's Fireside

Letter No. 98.—Regarding Rods, Lines and Flies.

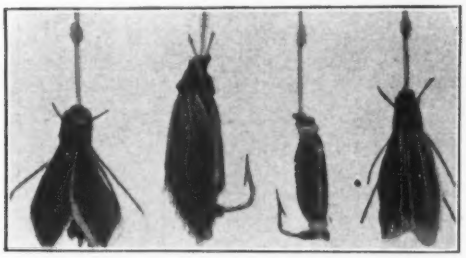
Editor Angling Department:—Please give me the addresses of Cummings and Hardy tackle houses. Could I get catalogs from them during the war? I desire to secure a split cane rod of about 8 feet, weighing 4 ounces, and am willing to pay $15. Can I get a fairly good rod for that figure? Would I be wise to get a 9 foot, 5 ounce rod? I desire the small hooks therefore wish a light rod. What size tapered line shall I get, also what size level line?—C. G., Butte, Mont.

The two addresses you desire follow: Hardy Bros., Ltd., Alnwick, 61, Pall Mall, London. W. J. Cummings, North of England Rod Works, Bishop Auckland, Eng. I have not received catalogs from England this year, which is not saying that you could not should you ask for them. No harm in writing, anyway. Personally I do not see why one should send abroad for tackle. I honestly believe that American-made goods are in every way as reliable, and some things better. But I am an American. I have English flies in my stock but I can not see but that American made are as perfect and just as artistic. I know that Miss C. J. Frost, Stevens Point, Wis., ties perfect flies; as does also half a dozen other expert women. I am under the impression that Mr. S. Howarth, Colorado Springs, Colo., 517 N. Pine St., ties flies; if not, he can put you in touch with some western man or woman who does. Regarding your rod question I would say that all depends upon the character of the water to be fished. If small mountain brooks, then get the 8-foot rod, but if for general fishing, where heavy water and fish may be encountered, get the 9-foot. You should be able to get a fairly good split bamboo for $15; I have one of that price that has rendered me good service; 9-foot, weight 4¾ oz. Write any of our advertisers for information. I would say use a size F line for such a rod as you desire. If you desire a tapered, get an F tapered to H; but all depends upon the quality of your rod; explain fully what you want to the rod-maker. It is usual to get an E tapered to G. If you could get in touch with Mr. Perry D. Frazer, one-time editor of Forest and Stream, now making tapered lines, you could get all the information you desire. I have lost his address. Undoubtedly Martin's Sons, Rockville, Conn., could help you out.—O. W. S.

Letter No. 99.—A New "Dry Fly."

Some weeks ago I received a sample fly from a Mr. E. L. Cox which excited my curiosity, so I wrote him for "further in-

formation," the result being that I stocked one page of my 1915 fly-book with his "Never Wet" flies. Of course I cannot say as to how attractive they will prove to the fish, but they "look good" to me. The idea is as follows: The body is made of quill, closed at the ends, so that the fly is certain to float. The weight of the hook will



Enlarged from Nos. 8 and 10 hooks.

cause the fly to strike the water in a natural position, wings up. Quill is colored —on the inside—to match the tints of natural insects, and as water never comes in contact with the coloring matter, the body will remain bright, no matter how long used. The wings are down upon the body, which the maker claims is the natural position for those of an insect trying to keep itself afloat, which effectually conceals the hook from the view of a rising fish. The inventor asserts that fishermen who have used the flies say that their catches average larger fish than with any other form of lure. Personally, I am looking forward to the try-out with much interest. As I write this (Feb. 22) a regular blizzard is shaking the house to its very foundations; I say this so that the reader may understand how impossible it is for me to mention the flies, after trial, and have my notice reach the fishermen for the season of 1915. Mr. Cox hopes to supply the trade through the Whitney Sporting Goods Co. of Denver. In this connection let me remind my correspondents that if they wish an immediate reply to their letters they must give their addresses so that I can reply personally; otherwise it will be at least three months before their letters can find the open door of the magazine, longer if they await their turn. Do not write me on the 29th of a month saying "Please answer in next issue of Outdoor Life." The Fireside is always made up two months in advance. By the way, it is a good idea to enclose a stamp when you write for a personal reply.—O. W. S.

Letter No. 100.—On Keeping Minnows.

Editor Angling Department:—Is it possible to keep minnows for any length of time, and, if so, will you please give me a few hints?—C. G.

The keeping of minnows is not at all difficult if you set about it in the right manner. Of course, if you have plenty of running water, creek, fountain or spring, a box can be set in the earth in such a manner that fresh water will flow through it. Such a box should be covered with a coarse screen so that kingfishers may not rob you. If you are without running water, a barrel may be placed in the basement or on the shady side of the house, with a can or keg elevated some three feet above it. A small hole should be made in the upper receptacle so that fresh water will constantly drip or trickle into the barrel, carrying air down into the water. Barrels should be cleaned once in a while. In taking minnows from your stock, be careful not to wound the little fellows, for a wound breeds "fungus" and fungus means death. Just as soon as you see a minnow with a "mossy" growth, remove and clean both barrels. As to feeding, a little bread. crumbled, or finely-chopped meat may be given. Do not over-feed or you will poison the water. I think I am safe in asserting that more minnows are killed by overfeeding than by starvation. I have no trouble in keeping minnows, neither will you if you exercise a little care.—O. W. S.

Letter No. 101.—Picturing the Catch.

Editor Angling Department:—Enclosed you will find a picture of myself and catch of fifty black bass, averaging probably two pounds apiece.—C. A. M., Ohio.

Unfortunately, the picture is too blurred to reproduce clearly, and possesses little value other than emphasizing the fact that you must have mighty fine fishing in your neck of the woods. It is not for me to say whether one man's catch is excessive or not; it all depends upon circumstances, I suppose, but for the life of me I do not see what you did with a hundred pounds of fish unless you salted for winter use. But let that pass. Now, will the readers of the Fireside suffer an exhortation and an admonition? We want pictures to brighten these pages and we are getting them. We do not cry out against the picture of a string of fish. Herewith we show such a picture, one that is suggestive and satisfactory, a precious reminder of a pleasant day. As the letter that came with the picture suggests, it would have been better had the photo been taken before the fish were dressed, but that was out of the question under the circumstances. We desire pictures, and more pictures—pictures depicting actual fishing scenes, good catches, not exorbitant ones. Act on the advice of this photo, and keep out of the

Writes L. S. Barnes, Seattle, Wash., who sends this photograph: "These bass are just half a catch I made in a lake near Seattle, in a half day's fishing. Got in too late to take picture on day catch was made, so took them after dressing."

picture yourself as a rule; of course there are times when you can arrange a picture with a string of fish in the background in such a way that it will be highly artistic. It is a safe rule to act upon, if fish are in the foreground, keep out yourself. Let us stand, not for big catches, but for clean sport.—O. W. S.

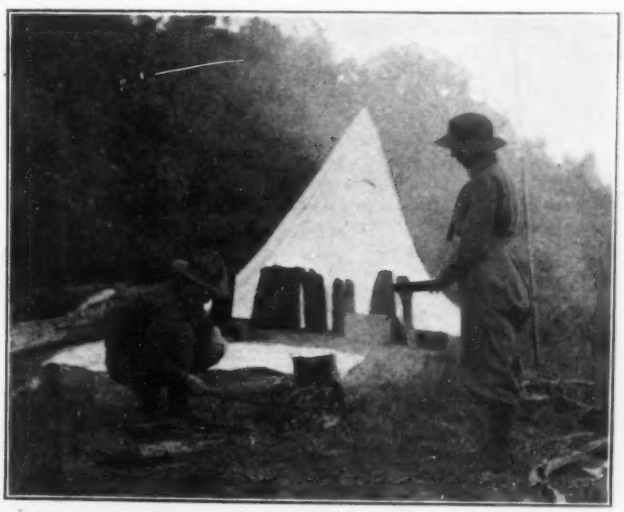
Letter No. 102.—More Winter Fly Fishing.

Editor Outdoor Life:—I am enclosing some kodak pictures of a catch of trout I made on flies the morning of December 27, 1914, in a stream known as Spring Creek, and in the Yellowstone River below where that creek empties into the river—about eight miles from here. Most of our local anglers are inclined to regard the catch as very unusual at this season of the year. There were eleven trout; one weighed 2½ pounds, another 1 pound, and the remainder range from ½ to ¾ pound apiece. I used No. 12 Haywood flies—Special Red Ant, Jungle Cock and a light-colored green fly, the name of which I cannot recall. The peculiarity of the trout were shown by the fact that a friend fished the same water the same day using minnows for bait, and caught only a lone trout."—E. A. W., Livingston, Mont.

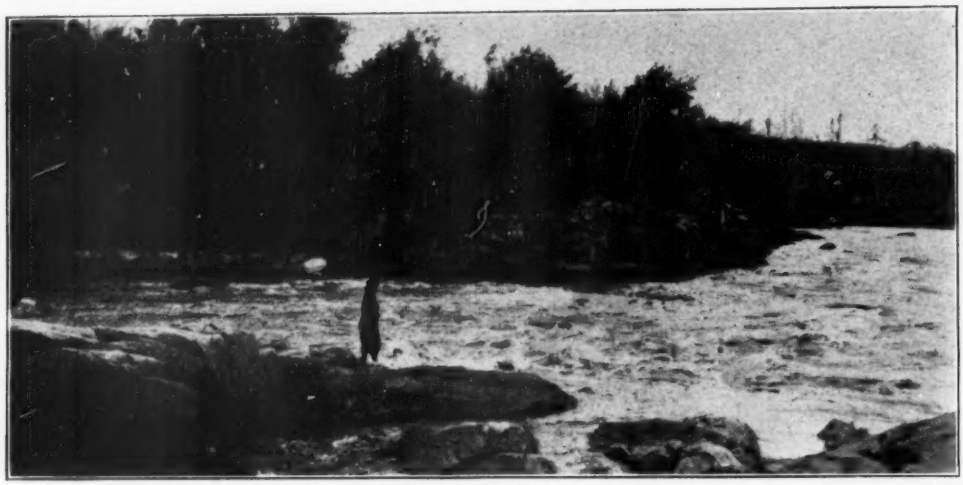
I have read your letter and examined the photos with much interest; unfortunately the latter will not reproduce well, owing to dullness. I must reverse my opinion, it seems. Western trout at least will take a fly in midwinter. I am quite tempted to visit my favorite stream right now (January) and discover if Wisconsin fish can be induced to rise. Now enters the question, is it wise to take trout in winter time? Personaliy I much doubt it. I imagine that perhaps your fish are somewhat put to it for food during the cold season and rise because of hunger. Food is scarce and the fish less sly because of the press of appetite. You Western people have such wonderful fishing that it behooves you to take lesson from the fished-out streams of the East and preserve your precious heritage. We have touched on this matter in the Fireside a number of times and hope that our attitude may stir your Legislatures to action. Better cut out the winter fishing e'en though you have fish a-plenty now. Thank you for your interest in Outdoor Life, and when spring again smiles upon the land let us hear from you once more with a few pictures of actual fishing conditions. Send us contrasty prints please.—O. W. S.

Letter No. 103.—Another Woman Wakes Up.

Editor Angling Department:—Ever since reading letter No. 67 in the January issue



And why not, pray? Compliments Mrs. "R. D. H.," Chicago.



Mrs. "R. D. H." busy with rod and reel.

I have been moved with profound pity for that misguided Bostonian who feels as if we lower ourselves in the eyes of men by donning overalls and "roughing it". I sincerely hope she is not old for she has not yet commenced to live. And I know whereby I speak, for it was only last summer that I came to life. My eyes were opened and I saw for the first time the real colors of the sky, smelled the fragrance of the pines and began to comprehend the wonders of nature and the vastness of God's wilderness, and to realize what I have been missing. My husband, a Mr. S. and I took a six-hundred-mile water trip, canoeing down two rivers and up part of a third, across eighteen lakes and shooting thirty-five rapids, and after our return I chanced to hear my husband say to some of his men friends, "Why, my wife's the best fellow I ever went camping with and I'll never make another trip without her." I certainly did not lower myself in one man's eyes.

MRS. R. D. H.

We are deeply grateful for your letter and beautiful pictures and only are sorry that you did not tell us something about that wonderful canoe trip of yours. If "Boston" does not begin to feel like the proverbial two cents, I miss my guess. The open is for women as well as man.—O. W. S.

Letter No. 104.—Some Hints On Rod Making.

Editor Angling Department:—While not a regular subscriber to your valued magazine, I am a constant reader of it, buying month by month from my news dealer. Recently I started to plan a bait-casting rod and met a stumbling-block at the very outset which held me up for some time, but as I at last solved the problem I thought perhaps my experience would be of help to other brothers of the angle. Here is the "stumbling-block." I planned a casting rod 72 inches long, and desired two joints of equal length, but found that the ferrule added 1½ inches to the butt joint, so that the wood of that joint would have to be just that much shorter than the tip if both joints were to be of the same length when taken down. In the following manner the length of the wood in each joint may be determined. Let X equal length of wood in butt joint. Assume that 1.5 inches equal the distance the male ferrule sets into the female ferrule, and that the over-all length of the rod will be 72 inches, the rod being composed of two sections. Hence we have,

2 X + 1.5 inches = 72 inches.

2 X = 72 inches — 1.5 inches or 70.5 inches.

X = 35.25 inches, length of wood in butt of joint.

X + 1.5 inches = 36.75 inches length of wood in tip joint.

These dimensions would be actually correct were it not for the fact that the tiptop adds .25 inches to the tip joint, and that there will be a space of ⅛ inches between the end of the wood in the butt joint and the end of male ferrule. In order to correct these discrepancies it will be necessary to subtract 1/16 inch from the length of the wood in each joint, and in addition ¼ inch from the length of the wood in the tiptop. This equation may be altered so that it may be used in determining the length of the sections in a rod of any number of joints and any length. To illustrate, in figuring for a rod 9 feet over all to be composed of three sections:

3 — X + 1.5 inches = 108 inches.

3 X = 108 inches — 1.5 inches = 106.5 inches.

X = 35.5 inches length of wood in butt and middle joints.

X + 1.5 inches or 37 inches length of wood in tip.

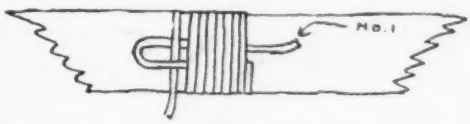
In your Arms and Ammunition Department exceedingly interesting articles and

exchanges of opinion are published every month. Can not the fishermen have the same kind of articles in their corner, articles dealing with rods, reels and lines? May I ask some fellow fisherman to give me his opinion of the relative merits of split-cane and bethabara rods for bait and fly casting?—"Mae," Fayetteville, N. Y.

We have spent more time than we would care to admit upon the above problem, of interest simply from a mathematical point of view. Why have both joints of the same length; what, save possible convenience in carrying, is gained thereby? As pointed out in this department again and again, whatever one may gain in convenience by having both joints of the same length, is more than overcome by what is lost in strength, durability and casting power. By far the best construction is what is known as long tip short butt, second of course to the one piece rod. The point of weakness is always the middle of a rod, so to speak, and better far run that middle ferrule down the rod. Am sure all practical anglers will agree with me. Our friend makes his casting rod 72 inches long, which to our way of thinking is exactly 6 inches too long. Choosing between a 6 and a 5 foot rod I would take the latter every time for bait casting, but I want my rod just 5 feet, 6 inches long. Just the same, anyone with a taste for figures will be interested in the problem our friend sets forth. As to his remarks regarding material for department we can only say that the suggestions are in line with our own plans. We have already published articles upon the relative merits of split cane and solid wood rods, bethabara having come in for its share of attention.—O. W. S.

Letter No. 105.—Another Method of Binding Rod-Winding.

Editor Angling Department:—Referring to Mr. Smith's article in your February number, viz. "Rod Making for Common Folks" and particularly cuts No. 5 and 4, showing method of tying off winding, I submit a sketch showing my method which I consider an improvement of his. When



end No. 1 is drawn taut, to about center of winding, both sides are secure, any strain on one tightening the other. In general it makes a neater job as quite often when using Mr. Smith's method your tying thread breaks, leaving four parts of line under the winding. I submit this merely as an improvement to his most interesting article, for I believe many (as I know I did) enjoyed it very much.—M. A. G., Wausau, Wis.

I have studied the method with much interest, to me altogether original, and am surprised that it has not caught my eye before. I think it would work well for narrow bindings but am not fully satisfied that it would serve equally well where wide ones are employed. From my experiments I am under the impression that the loop will not render as readily as when both free ends are in the hands of the operator. Perhaps I am wrong, but I shall soon know, for I will use the new method when winding my next rod.— O. W. S.

Trout Lore

Chapter 16—Bait Casting for Trout.

In April, 1914, Outdoor Life published an article by me upon casting for rainbow trout with short rod and artificial lures, the result being an avalanche of letters, questioning and critical: For any original method of life or thought must needs come in for its portion of criticism, we expect that. So it is not my purpose here to present a brief for trout bait casting, knowing full well that to do so would stuff my mail bag unanswerably full, as well as rupture some life-long friendships. However, there is rare sport in casting for trout, using proper tackle; furthermore, the variety of tackle makes not the man. It is a new sport, and an enjoyable one. Granted, dear critic, right here in this first paragraph, there is no fishing like fly fishing for trout—ye gods and little fishes, don't I know?—but if trout can be taken on other tackle, when they will not rise to flies, why should the "other tackle" be tabooed?

A NEW SPORT

I think I have said enough in the foregoing paragraph to convince you that I am a confirmed fly fisherman, therefore I presume that you are ready to follow me into the "when and where" with not a little patience. Of course, not all trout waters are adapted to the needs of the would-be bait caster, and by bait caster I, of course, mean a caster of artificial lures. First, the water must be both wide and deep; secondly, the fish must average well above "fingerlings." It would be next to impossible

WHEN AND WHERE THE BAIT CASTER'S ART WILL SUCCEED

Near the headwaters of the Peshtigo River, where bait-casting was first tried by me.

to wield a short casting rod in the circumscribed area of the average trout swim, there would not be room to handle the lure, furthermore, playing the fish from the reel would be out of the question. In the article referred to in the first paragraph, I pointed out that the theater of my first act with short rod and reel was a wide and deep river, though I did not then name the stream, a number of correspondents guessed it, the Peshtigo River of Wisconsin. Since that experience I have resorted to the casting rod more than once, both for rainbow and brook trout, and I am free to confess that more and more I am coming to delight in the new way. So wherever there is plenty of water, the large fish showing a predilection for live bait, you will find that the short rod, multiplying reel and casting lure will prove effective.

A number of agnostics have questioned regarding where the fun enters, and I have invariably answered, "At the same door it enters in bass casting." If there is sport in playing a two-pound bass with short rod and reel, there is an equal amount of fun in playing a trout in the same manner. If you say that a trout is a fly-taking fish, I will answer that the bass is also. If you say that there is more sport in playing a two-pound trout on a five-ounce fly rod, I will answer that there is more sport in playing a two-pound bass on a fly rod. The whole thing is about as short as it is long. The sport enters, as in all fishing, in playing the fish. There is no sport in just killing fish, it is the battle, come weal, come woe, that makes the game worth the candle. On proper tackle—more regarding that in a moment—a pound, and up, fish will keep the angler busy far longer than he imagines. The bass manifests speed when he darts away at the end of a line, but he is as a freight train to an express when compared with a thoroughly frightened two-pound speckled trout. If the water fished is composed of rapids and quiet pools alternating, as was my portion last summer, and the fish rush up into the rapids, you will think yourself connected with the greatest bunch of trouble that ever wore pink gills. Not every man can play a trout successfully from the reel. Imagine a fish, say 125 feet away, just at the brink of a long, mad rapids, your bending, lithe rod keeping tune to the wild music of the humming line. Under such circumstances if you do not experience thrills of several kinds I will miss my guess. I have been there more than once, and even writing about it causes my heart to beat faster. Another matter, the large fish, those sleepy (?) old fellows from the bottom of the pool will be inveigled to the surface by your properly presented lure. Perhaps those ancient denizens are stirred by curiosity, I only know that they are stirred, and that is enough for me. The whole thing is un-trout-like, but it is mighty interesting and highly satisfactory.

WHERE THE SPORT COMES IN

In the matter of tackle the rod naturally comes in for the most attention, though I am not so sure that as much depends upon the rod in the hands of a careful angler, as upon the reel; but be that as it may, the rod must be of the best, and as light as is commensurate with your skill. My preference is for a rather longish rod, one of six feet six inches, being a favorite; though in time I may go

SOMETHING ABOUT TACKLE

to the regulation bass rod, for I held out against the shorter bass rod until all anglers considered me a crank. To get absolutely perfect action, the rod should be a one-piece, but because of unhandiness that is ruled out. My rod is a three-piece beauty, just so that it will go into a suitcase with little trouble, though I honestly think one would get better action from a short butt, long tip construction. Whatever style of rod you select, secure one that has action and lots of it, not that it will be an aid in casting, but because it will add to the pleasure of playing the fish. If you find the long rod too awkward for casting, as you may if you are a devotee of the five-foot tool, I presume you will employ the latter. As to the reel, well, your favorite will of course be the one you will employ, though I have a strong preference for the level-winder. I want to have my eyes free to behold the gyrations of the hooked fish. The only disadvantage of the level winder is that it will not hold so much line, size for size, as the simple reel. I desire a long line, 200 feet being none too much in the waters fished by me. I am not going to spend much time discussing lures. Any of the lures that will take bass may prove attractive for trout. Thus far I have confined myself largely to minnow-like lures, and surface plugs, the medium sized coaxer proving attractive, but rather light for distance casting. That plain German silver minnow I have found good. Of course, the rubber minnows, weighted, and lures of that ilk are good. I am inclined to think that almost any under-water lure will attract trout, though I have not experimented at length with over a dozen of the better known plugs. Here is a field that should attract the angler with time to squander.

NIGHT CASTING

I have found night fishing with the short rod far and away the better time, probably because the large fish, those more apt to be attracted by lures, are night feeders. All the radio-active lures are good, at least the three tried by me have proven so, especially when employed as under-water baits. (Any surface lure can be made an under water by properly weighing the head, a small shot sometimes being sufficient.) In open country where there are no trees to interfere with the back-cast, and room to play the fish, I would strongly urge the tyro to attempt night casting. Be sure you are provided with a good gaff or large landing net, as well as some sort of a light, a pocket flash being convenient, but hardly powerful enough for large water. Night bait casting for trout in mine, when I desire a new experience, one that is just disagreeable enough always to remain new. Thereby hangs a tale.

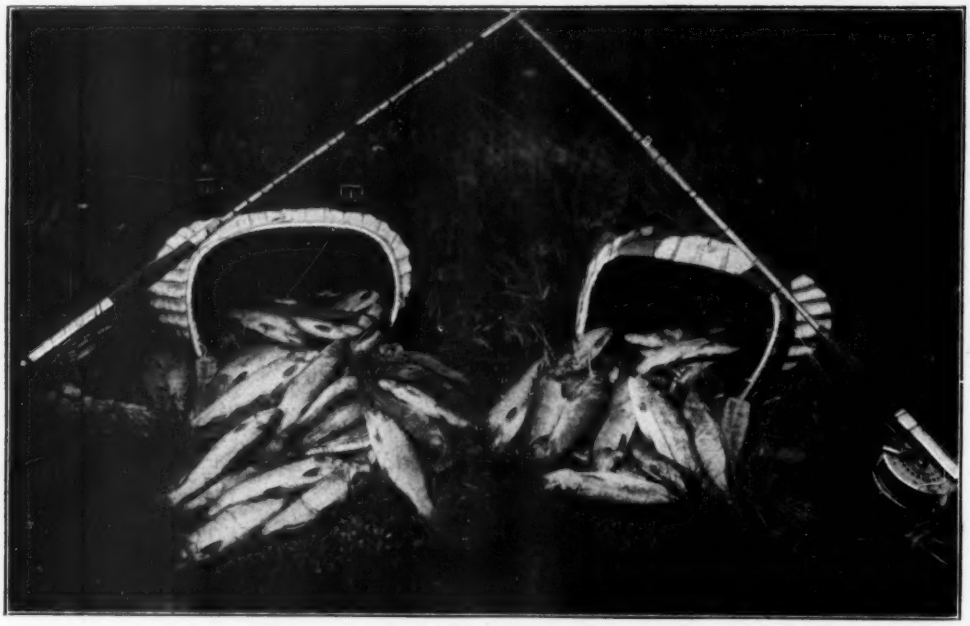
Casting for "rock trout" on the shores of Lake Superior.

I purpose writing an article upon this subject some day, and only mention it here that as much information as possible may be found in this work.

CASTING ON LAKE SUPERIOR

Anywhere that speckled trout are found along the shores of Lake Superior they may be taken with the short rod and reel. I know of no fishing more captivating and entrancing than that to be enjoyed where those great red rocks lift themselves above the water along the north shore. Some large speckled trout are taken by the rodster who simply casts out into the lake amid the rocks. Undoubtedly if one were to cast upon the reefs, as described in Chapter 14, larger fish would be taken. It sometimes happens that an overgrown lake trout, "Cristivomer namaycush," will take the hook; then he of the four or five-ounce rod has his work cut out for him.

In conclusion, I would say that this is a field but little explored by anglers, but later will become very popular, more especially for rainbow in large rivers and for lake trout, the species just mentioned; but just the same, I believe that there is ample reason for including this chapter in "Trout Lore." The man who is privileged to fish waters adapted to this method is unwise if he does not investigate its possibilities.



Western trout taken from Eagle Lake, Colo., August 15. Photo by E. C. Backus, D.D.S., Colorado Springs, Colo.

Trout of the Western Waters

Trout in our western waters are represented by six more or less conclusively accepted species and something like twenty-three sub-species; this does not include such trout as have been planted in these waters, the most important introduction to mountain streams being the Eastern brook trout, scientifically known as Salvelinus Fontinalis. In many places where this trout has been planted, it has multiplied with the result that native rainbow and Dolly Varden have passed away, the Eastern brook trout taking their places. Of the various species there are the Dolly Varden, without any sub-species; the steelhead trout with four sub-species; the native rainbow trout with five sub-species; the golden trout with three sub-species; the cutthroat trout with ten sub-species and the Tahoe trout, sometimes recognized as a species, having one sub-species. It might be added that the golden trout is really a rainbow, but the fact that it is so different in coloration and other distinguishing features, makes it wise to place it in a class by itself. Likewise, in the case of the Tahoe trout, while it is of the cutthroat species it is considered as an apart individual owing to its characteristic markings.

To the above category might also be added as a species the lake trout, found as they are in various lakes throughout the west, principally in Montana where they grow to a great size and are known more generally under the term of Mackinaw trout.

The rainbow trout (Salmo irideus), native to the waters of California, is by far one of the most important fish of the West; it is a fighter when taken out of clear, cold water on par with the best, unless we may consider it the best fighter in the salmo, or the charr family. David Starr Jordan who, in collaboration with Barton Warren Evermann, wrote "American Food and Game Fishes," makes this comment concerning the rainbow trout: "Several attempts have been made to introduce it in Eastern streams but it appears to seek the sea when lost." The rainbow trout, however, has been planted in the waters of Minnesota, Wisconsin and Michigan. In Michigan, notably, the rainbow trouts have increased to such an extent that it has actually been debated whether or not to place it upon the lists as a commercial fish, allowing fishermen to kill it wholesale. It is claimed that the rainbow trout in Michigan is killing out the brook trout; that it is gaining the ascendency by sheer weight of numbers.

The rainbow trout taken in such streams as the Au Sable, the Boardman and the Pere Marquette of Michigan cannot put up the fight that goes into a flashing rainbow taken in the cold streams of California, notably the King's Rivers country. Here practically any of the American standard

trout wet flies will bring them to the surface, often in great numbers. The rainbow trout, unlike the charr, or so-called trout, have easily distinguishable scales upon its sides, a comprehensive feature; also the largeness and notable formation of the head. In coloration the rainbow trout is treated to a background tone of bluish, with an intermingling of brownish, or a subdued reddish; the sides are silvery, with a well-defined lateral line of red. No dottings appear below the lateral line. These black markings, or spots, appear upon the head and the back, the dorsal and the caudal fin. Only upon the fins are these spots evenly arrayed; upon the back they are scattered unevenly, always seemingly different in various specimens taken.

Rainbow trout are taken in Southern California streams in a very small length and light weight; in the region of the Sierras and northward into the California country they will reach such weights as eight pounds. In Michigan and Wisconsin rainbow trout are taken even exceeding this weight. There are five sub-species of the rainbow trout, the Western Oregon rainbow trout being one. This trout (Salmo irideus masoni) is found in often the very smallest of streams, and in wild territory, as is found in this Oregon country they abound. Some streams are actually alive with them and they are easily taken with light tackle, for they are never very large. Other sub-species of the Californian rainbow is the McCloud River rainbow trout (Salmo-irideus-shasta), found in the McCloud River, Shasta county, California. Also in the same country, in the McCloud River, is found what is known as Stone's trout (Salmo-irideus-stonei), some specimens of which will reach a most appreciable weight, by far the greatest among the rainbow clan. This trout is more of a greenish hue, than a blueish cast. Specimens seen have had very few, if any, dottings at all. The Stone's trout takes the fly readily enough; the Professor, Grizzly King, White Miller, Scarlet Ibis and the Palmers, tied to size 4 hooks. They take live bait with avidity, the grasshopper and salmon eggs arousing their interest from the start. During my tour of California a grasshopper pest swept over the northern section and the fishing as a result was poor, to say the least. The streams were literally covered with this food. Naturally the fish gorged themselves and would not rise to the fly except occasionally as though in sport.

The fourth in this category of rainbow sub-species is found in lower California. It is scientifically elaborated upon as (Salmo-irideus-nelsoni), an extremely small arrowy trout, it may be said, and wholly insignificant in weight as compared with other members of the clan. It has a brother, another sub-species, found in the Santa Ana River country, California; it, like the lower California trout, has very little to commend itself as a distinct fighting fish to fulfill the expectations of one going out for rainbows. I have found the very finest of hooks, flies tied to sizes 14 and 16 being the best for these trout, and the lightest of tackle should be used. The Rio Santa Ana rises in the San Gorgonia mountains, a wild, picturesque stream of cañons, wooded in places or brush environed. This trout, the last of the rainbows, is scientifically termed (Salmo-irideus-evermanni).

California streams are yearly stocked with a fresh consignment of fingerlings. When fishing season comes around they will be large enough to catch. Usually all are caught off, in well known coast streams, by the time the season is over and a new stocking must result. Streams also dry out, and at the coming of season they are mere rivulets; trout can then be found only high up in cool mountain pools, when great fishing is to be had.

The drying out of streams holds good only in the arid sections of California. In the Sierras the streams are full the season through and the trout are of good size,

The Dolly Varden trout is the brook trout of the West, since it is native to the states that lie along the Pacific Coast. It has been introduced into other parts of the West and is now flourishing in increasing numbers everywhere. The Dolly Varden trout is a distinct species, just as is the Eastern brook trout, the Rangeley trout and the Sunapee trout. The Dolly Varden has no sub-species. It is, however, a charr, belonging to the genus: salvelinus. It is sometimes known as the Malma trout. It is found as far up as in Alaska and British Columbia, and is, as many do not suspect, sometimes found in the sea. In the waters of Puget Sound, as I understand, they have been taken with a weight of twelve pounds, though this is very uncommon indeed, and rarely if ever occurs in fresh-water.

While the Dolly Varden trout may look like the brook trout of the East (salvelinus fontinalis) yet its markings are so characteristic, so impressively different that even the unblushing amateur may tell them apart. The Dolly Varden trout has not the eccentric worm-tracks, "vermiculations," upon its back and notably upon its dorsal fin, as has the Eastern fontinalis and neither are the red spottings upon its back and sides encircled with the blue noted upon the former fish. These spots, mere dabs, occur both above and below the lateral line. The Dolly Varden is more slender than the Eastern brook trout; the body is more proportioned for life in swift waters; the sluggish waters of lowland streams often make a trout dull, inactive, and as a result the

fish takes on more broad, heavy outlines. Found in high mountain streams, in Idaho, Washington, Oregon and California it is a charr that is worthy the tackle of any man. The Dolly Varden is a fighter with a reputation behind him. In those cool mountain pools you will find them, eager to take the fly, and without bashfulness at that.

ROBERT PAGE LINCOLN.

(To be continued.)

Some Floating Lures

The surface lure is comparatively a recent production. It was only day-before-yesterday, so to speak, that I first heard of the "floater," and yesterday that I began using it. The floating lure, or surface bait, has steadily grown in popularity until today no caster's outfit is complete without a fair collection. I say "fair collection" for to have a complete collection would require more cash than most of us have to lavish even upon a hobby. Furthermore, while I possess and use certain plugs, thinking them the best in the market, other fishermen swear by what I disregard, and achieve success, sometimes where I fail. Which impels me to say again, more depends upon the fisherman than upon the lure. We must have faith in a lure if we are to achieve any great success with it. Consequently there are just four floating lures by which I swear, and just one with which I would go up against a forlorn hope with absolute certainty. What did you say, Mary? "Name them?" Not on your life! No other angler would agree with me and I would have as many quarrels upon my hands as there are users of floating plugs. Don't I know? Some months ago I wrote an article upon favorite plugs and as a result my name is anathema in several quarters even yet, and certain lifelong friendships have been terminated. I have selected at random from my collection eighteen floating lures, which may be regarded as typical. I presume that among them you may find your favorite or two, and again, perhaps not. If you do not discover the one you consider "the fairest among ten thousand," it is not because I do not consider it worth while, simply that I did not happen to get my hand upon it, that's all. If you hope to hear me recommend any one lure to the exclusion of all others, stop right here and turn to the advertising pages. I have had the conceit taken out of me several times by fellows successfully using lures I contemptuously dubbed "money getters" in my own water and with my own rod, too. No, I am not recommending plugs these days. I am just trying to give you an idea of what there is on the market. Having thus cleared the ground somewhat, let us consider the work and place of the floating lure.

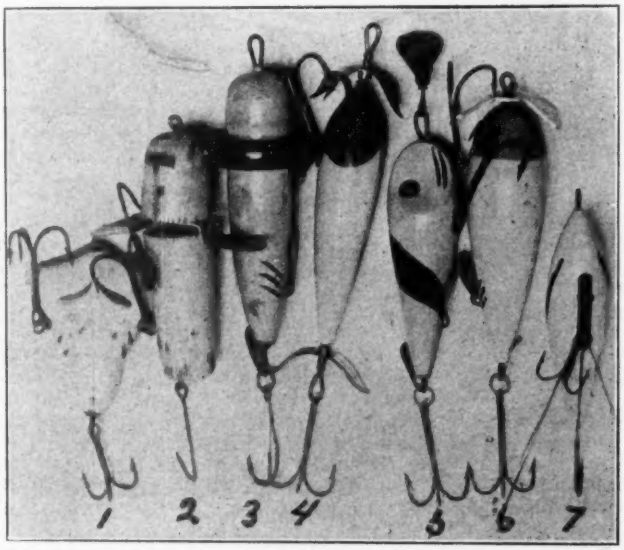


Fig. 1—Some floating lures.

Not always will the floating lure succeed; there are times when only the deep-running plug will stir bass to attack. (Later there will appear some articles upon under-water plugs.) The surface lure is for surface-feeding fish and for fish found in weedy-bottomed lakes. Yet, even a floater must be cast with care amid the weeds, for unless especially designed for the purpose, the weeds will tangle them. All else being equal, the floating lure that makes the greatest commotion upon the surface of the water is the one that will prove the most successful. Right there is the strong point of Jamison's coaxer; for a simple lure it certainly does stir the water (Cut No. 3). Decker's well-known surface lure creates a wake like a stern-wheel Mississippi steamboat, and it will get bass (Cut No. 2). I have never failed absolutely with but one of the lures illustrated; that one has never been out of its box; probably next season there will be one or more bass to its

credit. The surface lure is certain to prove more attractive early in the day and again at evening, when the bass are upon or near the surface. I am not one who believes that a surface lure should be used at all times and under all conditions; if I did I would use but one. My rule for all varieties of angling is, if one lure will not bring net results, another will.

One of the greatest advantages, aside from fish-getting, which we must place to the floater's credit, is the manner in which it behaves when we get a back-lash, or the unexpected happens. The surface lure always rises to the occasion. With an under-water, if a back-lash happens, we dare not stop reeling as we value the lure; if we do stop, down to the bottom it goes like a Jackey with a stone at his feet, to hook onto any rock, root or other obstruction and cling like a poor relation. The man who is learning to cast should use nothing but floating lures, for when he pauses to lay his line or untangle a snarl, the lure rises to the surface—if of the underwater-surface sort, to be described later—and waits calmly and patiently for the tyro to say his little say and straighten things out. The floater is the only patient plug I know. All exclusively under-waters used by me go nosing about looking for trouble, and like a man with a chip on his shoulder, always finds it. More than once I have taken off my—you know—undressed, to rescue some favorite lure from a watery grave. An all-surface lure will not treat you after that fashion. It is the lure for the beginner. And as I have said in this article and elsewhere, it is a successful contrivance for the sort of fishing it is suited to. It will take fish. The man who clings to the old under-water always, never using the surface lure, is making a great mistake, equalled only by the man who uses the surface plug to the exclusion of all under-waters. No more skill in casting is required with one than the other, only the under-water will not stand by until the morning when trouble comes.

I have already mentioned the surface-under-water lure—a combination plug of parts and possibilities. (Cut 1, Nos. 6 and 7, and Cut 2, Nos. 8, 9, 10, 11, 13, 14 and 15, are of that ilk.) No. 8, with the fluted head, will dart this way and that as you reel, ever working deeper into the water, unless you slow up and give it a chance to rise. No. 11, a splendid bass-getter, acts exactly as does the one just mentioned, the water rushing through the hole shown in the illustration drives it crazy. No. 15, with the glittering side pieces of nickel, with body mottled like an impossible rainbow, is also a darter, under-water and surface; presents a most handsome appearance in the water, is just heavy enough to c splendidly with a rather stiffish rod. No. 10, with the fan arrangement at the head and removable weight, is a surface or under-water at will, merely changing the little ball of lead from rear to front changes

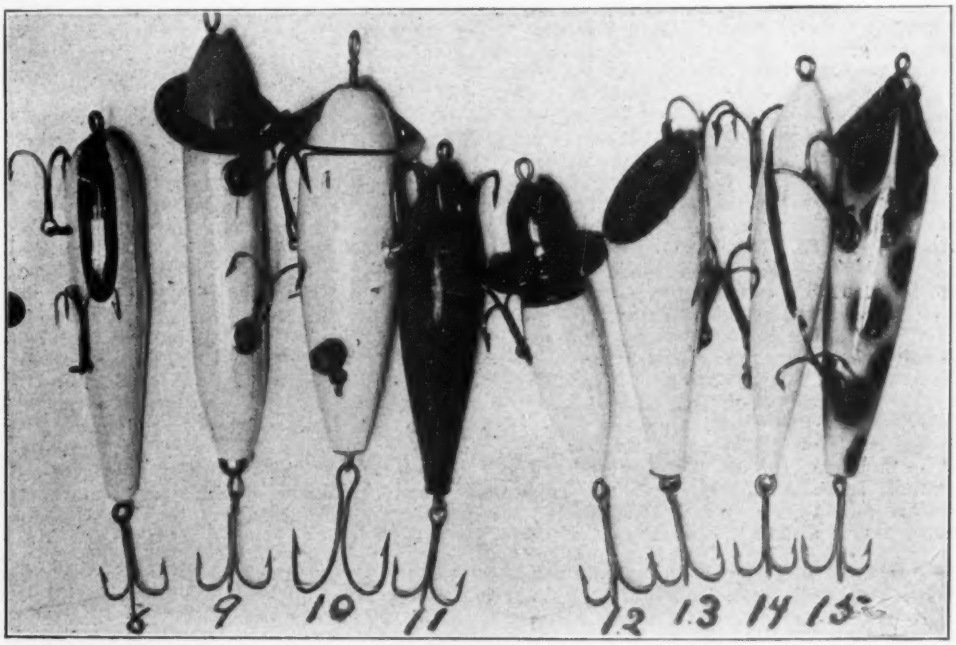


Fig. 2—Floating lures.

Fig. 3—" . . . for a simple lure it certainly does stir the water."

a good surface plug into a submarine. By the way, you can arrange a weight for any all-surface lure and thereby create an under-water; but do not use too much lead and do not place it too near the head. Nos. 8 to 15 are all darters; No. 4 is a good straight-away minnow-like plug that has made the sun shine for me more than once. I have a letter from Mr. Jim Heddon, now fishing on the other side, and it's woefully lonesome without genial Jim, who says that No. 9 was his favorite lure. "When all else fails I turn to it, and uniformally with success." I am not certain but am under the impression that the lure was his own creation. Just notice how many of these plugs are of the red-headed and neck-banded sort. That neck-band arrangement is a great thing, all right. Honestly, I think now that I have studied the pictures, that that random selection of surface lures is a mighty fine one. (When I go through my cabinet and pick out the others I will think the same thing, for that is the way with me; I love the lure of which I am talking.) I never actually hated but one lure; sometime I will tell you about that.

As you will discover by examining the cuts, few of these lures have whirling parts, only four out of sixteen, unless we count No. 5, whose fin-like disks of nickel simply swing back and forth as the lure is drawn through the water, presenting a very life-like and attractive appearance indeed. After years of experience and experiments I have come to the conclusion that the revolving head or tail piece is not a necessary attachment for all surface lures; undoubtedly there are times and waters where they are an addition to the attractivity of a lure, but as a rule the surface lure without the arangement is no less attractive. Of course an exception must be made in the case of No. 2 for the way those revolving blades thrash the water is a caution, and also as I think, the reason why micropterus attacks; he just must drive the disturber of peace and quietness from the water, can't help himself. When it comes to the under-water plug I desire the revolving arrangement, of one sort or another, though I have some under-water lures without hint or sign of blade that prove attractive but more regarding the underwaters in a later article.

The lures illustrated are for the most part red and white, in fact all save No. 15, which has a dash of green, are white, red or combinations or white and red. Why? Is it because manufacturers have found that anglers demand those colors, or is it because the fish themselves show a marked preference for the first two colors of Old Glory? I honestly believe that there are no colors like red and white, alone or in combination, to move black bass. The black bass is an American from aggressive snout to caudal flip, and he prefers the colors of his country's flag. Perhaps I am all wrong; some say that I am, but I have yet to be convinced. I have tried out other colors, in some waters finding certain shades of green fairly attractive, but always I turn back to those mentioned. No, I had nothing to do with selecting these colors, though perhaps the makers knew my well-known preference, therefore sent red. A few of these lures at least are made in other colors, and I have tried them out extensively, always seeing red in the end. Perhaps bass can not distinguish colors, but I think that he can.

Now I must draw this random discussion to an end, trusting that I may have helped some angler to an appreciation of the work being done by lure makers. Makers will not agree with my conclusions, I have found that out long ago; neither will the angler; but our Fireside is open for discussionists; so enter ye who will. Just a word regarding lures. I try to keep up with the ever-increasing output, but if some floating lure you have found successful is not here the slight was not intentional on my part; simply, I have not seen it, or the manufacturer has not brought it to my attention. I desire to keep up in matters of tackle, and can do so only by the hearty coöperation of anglers and fishermen. If you have criticisms to make, write me personally, not necessarily for publication. Don't knock.

O. W. SMITH.

Outdoor Life will be glad to receive information at any time of any infraction of the game laws of any state. Such information will always be immediately communicated to the game department of the state in which the infringement is alleged to have been committed, after which it will be our aim to exercise a stringent espionage over the carrying out of the game department's duties in the premises. It is not our intention to divert such information from the game department channels, but rather to solicit such information in addition to what has already been sent to the department by the informant.

Roping and Choking Bears to Death

I will not for a moment attempt to uphold the statement attributed to my dead brother Ramon, that he had choked two hundred bears to death with the lariat (see Outdoor Life for October, 1914), but I can vouch for the fact that he certainly did choke a great many of them to death, and a good many single-handed at that.

In the '50s, '60s and '70s bears were quite numerous in the foothills and mountain ranges in the counties of Ventura, Santa Barbara and San Luis Obispo, where all of my brothers were raised. In the fall of the year, bears would infest the localities abounding in acorns, where they would feed and fatten, seldom molested, and where occasionally they would kill cattle which were numerous all over the country. It was not uncommon to travel the fourteen miles between Nordoff and San Buena-Ventura, and sight bears during the daytime. Of course, upon approach, they would scamper away out of sight into the oak groves.

In the earlier days there were no schools in this part of the country, and the only education boys got was to learn to ride and to use the lariat. The favorite pastime for boys was to get out in the country amongst the herds of cattle and rope the wildest and most vicious of them. Thus, when a lot of real California old-time vaqueros were out hunting or rounding stock, and encountered a bear in an open locality, never believe that they would let the chance of real sport pass by. An old-time California vaquero was as confident when riding a good horse and accurate with the lariat, as a good hunter is with his gun or rifle. He seldom missed his throw and most always landed where and how he wanted. Had Mr. Price ever seen one at work in the most difficult places imaginable, he would not doubt that bears have been and can be lassoed and choked to death.

For the benefit of your readers I will relate a couple of incidents which I saw personally, and I think there are some of the parties who partook in the incidents still living, and who will vouch for the truth of my statements:

In the fall of 1876 I went with my older brother, José Maria, to what is still known as the Spanish ranch, at the headwaters of the Santa Maria River, in the northern part of Santa Barbara and San Luis Obispo counties, Calif., to visit our brother Ramon, who was foreman of the ranch. Upon our arrival we found that they were rounding up cattle in different sections for the market, and there was considerable excitement when someone reported that a bear had killed a cow and partly eaten it, breaking open the jaws, eating the tongue and part of the breast. It was certain that the bear would return the following night to finish his meal, so the carcass was dragged to the center of an open flat and left about a quarter of a mile from the brushy foothills.

At the ranch preparations were made selecting the best mounts, and after guards were stationed to look after the cattle selected for market, twelve men formed the cavalcade that started for the place. I was allowed to accompany them, merely as a spectator, and warned to keep well in the rear and out of the way when the busy time came.

Ramon stationed four of the party in a gulch south from where the carcass lay, and the balance of us stayed in a thick grove of cottonwood trees about 200 yards west. The moon came up about 9 o'clock

and shone brightly. At about 11:30 the horses began to act nervous, breathing heavily and looking towards the west. Every one of the party quietly tightened the girdles of their saddles and mounted, and after several minutes something was sighted in the obscure distance, and as it approached I could see the bear stop occasionally as though mistrustful and fearing trouble. As it approached the carcass, it went a complete circle around it, and at a distance, before deciding to approach it, then went straight towards it. A few coyotes slunk away in a hurry, and when at a distance let out a combined howl as though in protest of being disturbed from their meal.

At a given signal, all started as quietly as possible and not until we had gone half the distance did the bear see us and start to run south; but seeing the horsemen in time it made towards the brushy hills on the east, and that bear certainly could run. Two of the men threw their lariats but failed to land. My brother José Maria soon landed his lariat on the bear's neck and there was something doing in a moment; yells, growls and the trample of horses intermingled. Soon Ramon and others had a rope on the bear. The moment José Maria lassoed the bear he did not give it a chance, but jerked it continually so the bear could not use its forepaws to slip the lasso from its neck. The horse was kept on the run, pulling and jerking the bear, at times dragging it off its feet. This was necessary in order to prevent the bear from slipping the rope off. The bear was big and strong, with lots of fight in him, but his wind being cut off he soon began to get weak, and in about twenty minutes was completely exhausted and on the ground trying to breathe his last.

Despite the warnings I had received, being mounted on a splendid horse, I was right in amongst the boys and saw it all from first to last. Being more fortunate than my brothers, I spent part of my younger days at school and did not become proficient with the lariat or as a rider; although I spent several years later on the range and witnessed many feats of horsemanship and proficiency with the lariat that anyone who has not seen them can hardly believe. After the bear was dead some of the men dragged in some wood and made a bonfire and the bear was skinned; the head and paws were left attached. I took a measure of its feet and they measured 12½ and 8½ inches respectively.

Left to right, R. Ortega, M. Lopez, R. Lopez and —. Warner. Mr. Ortega was 75 years old when this picture was taken.

About a year and a half after the occurrence I have just related I was at the Reyes ranch on the headwaters of the Cuyama River and about seventy miles from the scene of the former encounter. The roustabout came in driving the saddle horses and stated that a bear had eaten off a dead mare that had died a couple of days before. In all probability it would return again to partake of another meal, so it was decided to try and lasso him and have a bear and bullfight. The ranch owned a very vicious bull who always led away a small band of cattle to some secluded, brushy spot, where he was IT. Woe to anyone who went about his domain unaware of the danger, for he would come away a great deal faster than he went if fortunate enough to be mounted on a good horse. The bull was reported to

have protected successfully his little band from the attacks of the biggest bears.

The bear tracks leaving the carcass led towards a narrow, brushy cañon, south towards the Pine Mountain. The carcass was dragged north towards a level, open flat with a small creek in the east and the main creek on the north, and left in a very open and convenient place for our purpose, but less than a quarter of a mile to the rough, brushy hills. There were about ten men and all got ready to partake of the sport. I will say, however, that there were only two of the men there who I considered were able to give account of themselves at any time and place when it came to lassoing a bear. One of these was Juan Perez, a heavy-set half-breed, who for some reason or other, elected to ride a horse not yet thoroughly broken to the work. The other was called Juan Chiquito or "Little John," and he was very accurate with the rope.

The men were divided and part were stationed among the trees on the east and the rest on the north. It was a few days before full moon and almost as light as day. At about 10:30 the horses saw something in the distance, and all with breathless silence prepared for the fun. When the objects approached nearer we could see that there were two bears instead of one! On they came, following the trail of the carcass where it had been dragged. With a few preliminaries, the bears went straight to the carcass and were soon partaking of their expected meal. Both parties started about the same instant, and so bent upon their meal were the bears that they did not start to get away before we were half-way to them. When they did start they knocked or bumped against each other and both fell but were up immediately and hitting their best licks toward the brush. In a twinkle Juan Chiquito had his lasso on one, but it was over the back and between the front legs. The old man gave it no chance and kept dragging and pulling him off his feet. All the other men, with the exception of myself, went after the other bear, and I made several unsuccessful attempts to lasso by the feet the bear that Juan Chiquito had roped. On one occasion, disregarding the warnings of the old man not to get in front of the bear, he made a vicious lunge at my horse, and had not the old man been so quick as to jerk it in the opposite direction just as he raised on his haunches to make a grab at me, I presume I would have a different tale to tell. A couple of the men came back just then and soon their ropes were on it, one around the neck and on its hind foot. The struggle must have lasted about a quarter of an hour before the other men came back, stating that the other bear had reached the brush before it could be roped. Two of the men having better horses threw their lariats several times but I believe were not anxious to land right. Perez could not reach him or there would have been two bears in the party.

Several lariats were fastened on the bear and slowly it was dragged and coaxed to an enclosure nearby, where there was a cottonwood tree to which we fastened the bear with a heavy log chain. We placed a strong rawhide collar, attached to the bear's neck, and the end of the chain, then a band of rawhide around its body just back of the forelegs, and a strong strap was fastened to the strap and the collar between its forepaws. As you might imagine, it was a dangerous undertaking for the man who fastened the collar and band, but there were six lariats attached to the bear"s neck and feet and a lariat looped over his nose to keep it from opening its jaws. I was one of those holding a lariat attached to his front legs while the collar was being attached to its neck. In his struggles the bear would contract his muscles and draw the four horses in for a moment.

When he was securely fastened and the lariats loosened, he seemed to lay stunned for a while, until soused with a few buckets of water, when he arose on his haunches and rattled his teeth in our direction. The rattle of the chain attracted his attention then, and he struck vicious blows at it and tried his best to slip the collar off, but in vain. However, he struggled and pulled on the chain until it seemed he might pull his neck off, but apparently this bear did not have a tapering neck as the collar resisted all his best efforts.

Leaving a man the next morning to souse water on the bear occasionally during the day, we all went to where "Pinto," the bull, ranged, and we found the band still in the open, but they lost no time in getting under cover of the heavy brush. "Pinto" alone stopped near the brush and stood defiant and throwing dust over his back as though inviting anyone to approach. After considerable coaxing, and after having one horse badly "hooked" and another slightly, we succeeded in lassoing the bull. After throwing and tying its feet together we brought a trained steer which we had along, and, with several other gentle cattle, we fastened them to each other's horns and drove them towards the ranch.

Next morning about 9 o'clock, we lassoed them over again, and fastened one end of the log chain to the bull's hind foot and the other end to the bear's hind foot—and they were turned loose.

When the bull got up he looked mad enough to fight anything, and sighting the bear, who had risen to his haunches, he made a move towards it, then stopped, looked again, and this time went for him in earnest. When the bull was close enough the bear grabbed its lowered head with his

paws and in a twinkle and apparently without much effort turned the bull over on its back as easy as a man would turn a lamb, grabbing it by the nose and neck. Immediately arising with the chain over its back, the bull made a second lunge with head lowered, and this time the bear seemed inclined to slink away. The bull struck and drove its horn to the hilt into the bear just back of the shoulder. With a terrific roar the bear turned to fight, but it was too late, however, as the bull did not give him a chance to rise. The fight was now one-sided, so the bull was lassoed and shot, as was the bear.

The above episodes are two which I have seen, and I have in mind dozens of others which have been related to me by my father and brothers upon passing places which would remind them of the occurrences. The last bear which my brother Ramon lassoed and choked single-handed was in 1893, at the headwaters of the Sespe River in the northern part of Ventura County, Calif. I was not with him, being in New Mexico at the time, and a clipping of the episode was sent to me. There is, however, a son of Ramon in my employ, who was with him and who witnessed the whole thing. They were on their way to their ranch, the "Potrero Seco," and just before taking the trail ascending the small plateau where the ranch is situated, they came upon a bear that had killed a heifer and was breakfasting on it. It did not take Ramon three minutes before he had his lariat around the bear's neck, the loop on top, and all the clawing and scratching the animal did could not dislodge the loop from its neck. Single-handed he pulled and choked the bear within twenty minutes, my nephew coming up only after he was assured the bear was dead. Ramon's boys, except one, never did much riding. E. C. ORTEGA.

California.

Colorado's Game and the Need for Protecting It

Editor Outdoor Life:—If you have room in your valuable magazine I want to say a few words to you and other sportsmen of Colorado in regard to the game of the state that is fast passing into history. There is not enough deer in Colorado for a start providing, however, that there is not one killed in five years. I know this from my own personal observation and by the observation of reliable men who have traveled from time to time through the game country. There is not enough bears and mountain lions in Colorado to speak of and they are not destroying the game. It is a surprise to me that the sportsmen of the state, myself included, are sitting idly by and allowing this condition to continue, and it is high time that we should wake up. Colorado should begin at once and spend at least $50,000 stocking the state with deer; then we should have a law providing for not less than $60 minimum fine, or sixty days in prison at hard labor. There should be a standing offer of $50 reward for any person that would arrest and cause conviction for any game or fish law violator. All responsible persons wishing to do so, should be provided with special game warden's commission with full authority; until we get something along the line I have mentioned, we will never have game again in Colorado. The violator will not respect a law he does not fear. And it would be up to him to respect the law or suffer; this would be no hardship on any good citizen.

We have a poor game law and not much enforcement. You will find more paid game wardens in the city of Denver than there are in the balance of the entire state. Law and politics will not blend under any condition.

I hope that the sportsmen of Colorado will have something to say through your magazine about this matter, and I hope to hear from all of them. J. M. WOODARD.

Colorado.

The Final Decision on the Federal Bird Law Yet To Come

In view of the fact that there is evidence that not only the public, but, in many instances the press of the country also, is under the impression that the decision just rendered by Judge John C. Pollock of the Federal District Court at Topeka, Kansas, in which he holds the federal law for the protection of migratory birds to be unconstitutional, is the final adjudication on that statute, the following statement correcting this erroneous impression has been issued by President John B. Burnham of the American Game Protective Association:

"Conservationists need feel no alarm over the Kansas decision. The Supreme Court of the United States now has before it on appeal a case from Arkansas in which the constitutionality of the law will be finally passed upon. That case lacks certain important elements, favorable to the sustaining of the law, which the Kansas case, which will be incorporated with it, will pro-

vide. In a sense, then, Judge Pollock's decision is a welcome one to those who are working to avert the destruction of the wild life of the country.

"The Kansas decision is the third that has been rendered by federal judges on the law. In Arkansas, Judge Jacob C. Trieber on May 23, 1914, held the measure unconstitutional, while in South Dakota, Judge J. D. Elliot on April 18, 1914, held it constitutional. It is to be remembered that the law is in full force and effect and will doubtless be vigorously enforced by the United States Bureau of Biological Survey everywhere in the United States, with the exception of the jurisdictions of Judges Trieber and Pollock.

"The solicitor general of the United States has asked the Supreme Court for as early consideration for the test case as is possible but it may be that it will not be reached before next fall. We are hoping to have it passed upon this spring.

"The federal law provides protection not only for game birds but for most of the country's most valuable song and insectivorous species as well."

The above announcement from President Burnham will be welcome news to the army of shooters in this country that has been awaiting a decision, one way or another, on this Migratory Bird Law. We believe that most of the shooters are in favor of the law; most of the sportsmen most certainly are; while a canvass made recently from our office among the state game wardens shows a strong feeling among these officials as a class to enforce the federal law if they are only given the authority to do so.—Editor.

If Information is Authentic, This is a Mighty Large Goat

Goat in photo, 11 ft. hind foot to end of nose; tip to tip, 8 ft. 3 in.; weight, 507 lbs.

Editor Outdoor Life:—I am sending you under separate cover a photo of a mountain goat killed in the mountains near here (North Yakima, Wash.). This goat measured 11 feet from the end of hind hoof to end of nose, from end of nose to tip of tail 8 ft. 3 in., and weighed 507 lbs., and was shot by Jack Robilard of this city. The skull of the head, which I believe to be a record one, lies on the ground just under the other goat.

This goat, although a much smaller one than the other, has a much nicer head. Goat weighed 414 lbs. The following is the measurement of this head: Around base of horns, 6¼ in.; tip to tip, 7⅛ in.; length of horns, 10 in. While the record head has horns 11½ in., this head has it beat on two points—tip to tip and circumference at base.

Washington. A. S. HARMER.

Upon receiving the above letter we wrote asking for further information as to how the big goat was weighed, and received the following reply:

"In answer to your letter of ten days ago asking what kind of scales the goats were weighed on, beg to advise that they were weighed on a pair of Fairbanks-Morse platform scales. The parties who shot and weighed these goats live 35 miles up in the mountains from here and was unable to furnish this information before.

A. S. HARMER."

Through the efforts of Dr. W. T. Hornaday of New York and John E. Brown of Helena, Mont., the state of Montana enacted a law at her last assembly (1915) placing a closed season on sheep and goats for a term of five years.

Proper Outfit for An Extented Alaska Trip

Editor Outdoor Life:—I am contemplating an extended trip to Alaska with a friend (we will have no more in the party) to be gone for several months, hunting, prospecting and collecting natural history specimens, and while we have from our outfitters a general idea of what to take with us, yet before deciding I thought I would ask Outdoor Life if it can give me any tips. Or, if you cannot, can you refer me to some sportsman who would be willing to give me the information desired. We expect to touch the Arctic before returning.

Illinois HERBERT WILEY.

Answer.—Our old-time partner in Outdoor Life, J. A. Ricker of Newport Beach, Calif., took a trip down the Yukon River past the Arctic Circle to St. Michaels, in a 24-foot motor boat (a most daring feat) the story of which was recounted in Outdoor Life a few years ago. He would be glad to give you all information at his command. E. Marshall Scull, author of "Hunting in the Arctic and Alaska," a trip which he took a couple of years ago, the story of which was published last year, 1914, enumerates the following things which he would take as personal outfit if he were to cover the same ground again (this list being cut below the one which served him on his first voyage in that country):

Two U. S. army flannel shirts, two suits woolen underwear, three pairs heavy woolen hose, three pairs light woolen hose, one Duxbak or Burberry hunting jacket, one suit of oil skins (hat, short coat, trousers), two pairs mukluks, one fur parka (Eskimo hooded fur shirt), one pair calked boots, one pair shoe pacs (rubber soles and vamps, leather uppers), one pair slippers, one suit pajamas, one cap with ear flaps, one soft hat, three pairs woolen gloves, three pairs cotton gloves (as windbreaks over woolens), two pairs trousers (preferably of jungle cloth), one belt, six handkerchiefs, one sleeping bag, books, toilet soap, tooth brush and dentifrice, talcum powder, razor, brush, shaving soap, hand mirror, brush and comb, three towels, two pipes, five pounds tobacco, pouch, needles, thread, buttons, knife, pocket whetstone (coarse on one side and fine on the other), tape measure, green spectacles of fieuzal glass, head net, binoculars, kodak, twenty films, exposure meter, note book, pencils, fountain pen, ink, fly dope, brass tags for trophies, scales, clothes bag, a dozen small oiled bags for duffle, one fine-tooth comb, insect powder, pocket compass, ten yards cheese cloth, simple medicines. Arms: One high-power rifle, fifty hard-point cartridges, fifty soft-point cartridges; one .22 rifle, 1,000 cartridges; one shotgun, fifty shells No. BB shot, 200 shells No. 4 shot, 200 shells No. 8 shot, 200 shells No. 10 shot; gun oil, rags and rods, assorted fish hooks and lines. Camping outfit: One light tent, one pack cloth, one folding lantern, one canvas bucket, two frying pans, three pots, plates, cups, knives, forks, spoons, can opener, one hatchet, 100 feet 3-16-inch rope, one pack bag or harness, one kerosene hot-flame stove, two one-gallon oil cans. Trading goods for small curios: Assorted needles, red, blue, black, white thread, leaf tobacco, chewing gum, matches, best quality small tools. Trading goods for furs, ivory, etc.: Flour, sugar, automatic rifles and cartridges, saws, drills, vises, clocks, watches, sewing machines, cotton duck (white, brown and blue).—Editor.

Breeding Fur-Bearing Animals

Washington, D. C.—Up to the present time experiments in breeding fur bearers have been carried on only with minks and martens by the United States Department of Agriculture. At the two stations—Prichard, Idaho, and the National Zoological Park—minks have bred, and the healthy condition of the young animals promises success. The stock of martens was secured too late for the animals to breed this season. In the coming year it is intended to add raccoons, skunks and possibly foxes to the list of animals to be included in these experiments.

Investigations into the economic value of North American skunks resulted in the pub-

lication of a farmers' bulletin on the subject. It has been found that this animal is one of the most useful of native mammals and a most efficient help to the farmer and the orchardist in their warfare against insect and rodent pests. As a source of fur it is also a commercial asset, the skins netting trappers about $3,000,000 annually. As the skunk is valuable in its activities as well as for its fur, experiments in breeding the animals in captivity are recommended. —Extract from annual report of the Bureau of Biological Survey, United States Department of Agriculture.

Additional Information on Binoculars

Editor Outdoor Life:—As a dealer and manufacturer of prism binoculars I would like to add a few lines to the comments which have appeared in your magazine One article which is particularly in my mind, was written by a close observer, and the subject ably handled for one who has studied the practical side in the field only and made use of the optical data as it was supplied to him by different manufacturers.

I have hunted many years and tried the different magnifications in the field and settled to eight power magnification with all the stereoscopic effect I could get. This latter property is very desirable when watching deer in timber or looking for them in brush. You need moderate power, good illumination and definition, and as stated all the stereoscopic effect which a portable glass will permit. For many years I also make regular trips to Europe, where my manufacturer makes my binoculars to my specifications. I sell them under the trade name "Alpine" with different adjects as "Alpine Stereo," etc.

As a dealer I can state that we sell about fifty eight-power binoculars to one of either higher or lower power, and this is not because we influence the buyer. In fact, we sell most glasses by sending the customers choice from the catalogue and invite him to get a similar assortment from some other dealer. By the aid of your magazine exclusively so far I have sold them all over the Union, in Alaska, as well as in New York City.

I carry binoculars in six, eight and ten-power with objectives from 20 to 32 millimeters; also monoculars, but contrary to the advice of many who know, the people buy the eight-power binocular.

Present conditions have stopped the importation of binoculars, because most foreign countries forbid exportation of this article. Field glasses can be had, but no prism binoculars. Even the goods which I purchased before leaving Europe last July were never sent although some of them I paid for. I found myself forced therefore to start the manufacture of this style of glasses and we will have the first lot ready for spring trade. I know that I must keep up the standard of the past or do better and the specifications, which I made to my manufacturer, will be adhered to.

These specifications are as follows:

	"Alpine."	"Alpine Aviat." "Alpine Stereo."	"Alpine Special."
Free diameter of objective	19mm.	25, 25mm.	34mm.
Linear magnification	8	8	8
Exit pupil	2.4	3.2	4.25
Light transmitting power	5.75	10.25	18

These qualities are dependent on one another and cannot be deviated in one without affecting the other. The exit pupil is figured by dividing the magnification by the free diameter of the objective, while the light transmitting power is the square of the exit pupil. Many makers, however, give their specifications figured on the size of the objective and are not even particular about that.

It is evident that any part which is covered by the objective cell cannot come into consideration. Tables which are published by a reputed writer should therefore receive his attention regarding actual facts. But apart from all the optical data the real factor of quality lies in the true curves and polish of the lenses. The optical formula may be the same for a useless glass as for a good one. We figure the curves, make the lens on a true tool, and when it is polished it may be different than it should be. There is as much difference in polish as there is in people, hardly two alike We pass the lens after it is good enough to pass for the service it is intended to give. Perfection as it is required in a microscopic and astronomic objective would not be appreciated in a binocular any more than in a pair of spectacles and would make them needlessly expensive if it was done.

Another item which enters as a factor to the results obtained by binoculars is the construction of the prisms. The so-called critical angle of glass varies according to the refracting index and is about 41° 10'. The required positions are most correctly maintained in the Porro Prisms, and this system has been adopted by Zeiss, Voigt-

laender, Steinheil, Busch and all American makers. Deviations to the wrong side would cause a loss of light, which naturally would not appear in the optical formula.

One of the most common defects in all field glasses seems to have escaped the attention of former writers. These are the so-called blind spots. They are the result of imperfect polishing and very hard to avoid entirely, or they may be caused by different densities in the glass itself. Fortunately they do not interfere materially in field use, because the observer will unconsciously turn his head to find or produce perfect vision or the eyes themselves will accommodate. This, however, causes eye strain. If a glass is used for astronomical work such defects must be eliminated, as they are a constant source of discomfort. A star may be seen a moment and not the next, and those who know how difficult it is to locate a certain star free hand will also appreciate a perfect lens for such work. Blind spots are easily detected. Place the glass on a fixed support as far away from and before a magazine page on which it has been focused so that the print can be read. If they exist they will show at once, and if too pronounced the glass should be rejected.

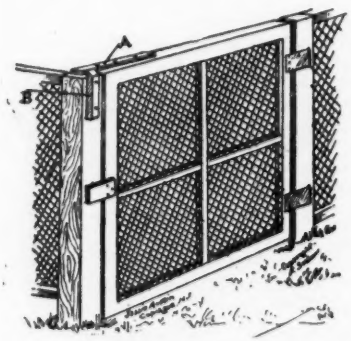
Nothing has so far been said about the mechanical execution, yet nothing seems to me of higher importance. True, construction may be apparent to a mechanic and is different from bending a glass into adjustment. One will hold its adjustment; the other is very liable not to. Inner construction also varies greatly. Some hold their prisms in place with a piece of cork, some with plaster of paris. We set ours in recesses, hold them in their place with stiff springs and adjusting screws so that nothing but actual bending of the frame itself can disturb the adjustment.

The buyer, therefore, will always be compelled either to use his own judgment in selecting a glass or to accept the dealer's or maker's name and reputation. I have always worked on the former policy and recommended it to all intending purchasers.

Colorado. PAUL WEISS.

A Practical Poultry-Yard Gate

It will make you feel good to open and shut this gate. The greatest obstacle in visiting pheasantries and poultry farms I encountered on my trips was to find practical gates for the yards. In some instances it made me disgusted and again I had a good laugh over it. It took sometimes fully three minutes of hard labor to open and shut a gate. I would like to hear from the genius who can improve on above gate for simplicity. A—is a lath extending 3 inches on the top of the gate and which goes behind the block B on the post. This block is set half an inch above the post and made with a slight slant. In using stout leather for hinges the gate can be raised off the block (lock) immediately and it will lock and stay locked in giving it a fair slam against the post. It should be hung 2 inches from the ground. If you cannot comprehend the construction, show the illustration to a carpenter.



F. J. S.

New York.

A Day Dream

My heart is longing for the hills,
I'm tired of walls and streets and mills;
Give me a rod and hook and line,
Waters cool, in shades of pine.

To feel the nibble of the trout
And see him frisk the line about;
How can I use this pen and ink
When of these joys I can but think?

Take them away, I cannot work,
In ink pot seems a trout to lurk;
Me for the hills and purling stream,
To fish and hunt, to rest and dream.

DELLA DIX.

The Boy's First Rifle

By Ashley A. Haines.

The shooter who fails to see anything of value in the small caliber, light-weight single shot rifle will be wasting his time in reading this. Being fairly warned, he will have only himself to blame if he reads the following which is intended to deal only with the more desirable features which should be found in the first rifle that should be placed in the boy's hands. Because I have decided to write on the above subject is not proof that I am altogether unfamiliar with the more expensive rifles, both single shots and repeaters, but as it is generally conceded that the single shot is the type of rifle that should be the first to find its way into the boy's hands, I, naturally, have selected this arm as the one to be considered for such purposes.

Before proceeding further with the subject in hand, let me say that I believe I have a fairly accurate opinion of the relative values of the smaller caliber rifles of the different types, for various purposes. The extremely heavy .22 caliber single shot rifle, telescope sighted and equipped with set triggers, may be the very arm required for extremely fine target work, or for small game shooting under certain conditions, but it is not the rifle that the boy, or many men, either, for that matter, would find the best adapted for all purposes. The hand-functioned repeating rifles, and there are many of these in .22 calibers well adapted for hunting or target purposes, are not the rifles for the boy to begin his shooting career with no more than the light weight, lightning fast and in every way exquisite little automatics. All of these rifles have their place, but none of them are rifles to place in the boy's hands until after he has had plenty of experience with some one of the more popular of the light weight single shot .22s which were primarily designed for his special requirements. And of these there are several possessing considerable merit; considering the extremely low prices at which they can be purchased, they are wonderful little arms. I regret exceedingly, however, that there are some .22 caliber rifles on the market which are a disgrace to the makers and dangerous to users and spectators alike. Many learn of the worthlessness of these cheaper arms I have in mind only after becoming purchasers. None but the inexperienced will buy them, of course, but for the protection of just such parties, laws should be passed prohibiting their manufacture. These arms are made of the most inferior material, all parts are poorly fitted, the chambering is often so faulty that, coupled with a poorly-locked breech mechanism, the shooter is in constant danger of meeting with serious injury at every shot fired. Some of these rifles I have in mind will assay about the same as the cheaper Floberts with which the markets were flooded thirty to thirty-five years ago.

Later, but not in this article, I will endeavor to briefly consider the best of the light-weight single-shot rifles of small caliber now being made, especially designed for boys' use, as well as offer targets made with such rifles at various ranges. At this time, however, it will be my object to point out the more important features that should be found in the arm that should be handed the boy for his first rifle. I am not quite certain at this moment, but am of the opinion that there is not a single shot rifle, of light weight, now on the market, having all the desirable features that I firmly believe they should have to make them absolutely perfect in every respect. Let us consider the various essentials that should be found in the arm we are considering and then we will be able to determine this point.

The weight should run from three to five pounds. The length of barrel could be any length from 18 to 24 inches, but I think 22 inches would be the length that would likely meet the views of the majority best. The action could be either of the bolt type, like the Winchester or Savage, or like the Remington No. 4, the last of the "rolling block" Remingtons, or with the "falling block" action like the Stevens Favorite. These are all good, but all, in my opinion, are capable

of being improved at least slightly, as may be mentioned in a later article.

In the modern high-power rifles the makers offer us arms with barrels heavy at the breech but tapering rapidly towards the muzzle. In our boys' rifle, why not have the barrels proportioned similarly? As made at present, most of them are very little smaller at the muzzle than at the breech. Surely the barrel for one of these light-weight, single-shot boys' rifle, if modeled after the military barrels, would produce a much neater appearing arm and one that the boy would appreciate far more than as they are offered him at present.

The barrels should be rifled carefully, and the ones I shall mention in my next article will be found perfect in this respect, while the chambering should be as carefully done as in the more expensive arms, but never so large as to permit the heads of the shells to burst, as is often the case in some of the cheap, undesirable rifles I have in mind. The breech blocks should lock solidly enough to insure safety at all times to the user, and the four rifles mentioned will pass inspection here perfectly. If of the bolt type, the hammer should rebound into a safety notch. It is true that an action of this type could easily be designed to draw hammer back to safety notch as action was opened, but this is not enough; the rebounding lock, provided it were arranged to rebound into the safety notch, as mentioned would absolutely prevent accidents from negligence on the user's part due to lowering the hammer, cocking piece, firing pin or whatever you want to call it, onto a loaded cartridge. And how many boys are there, not to mention men, who absolutely ignore the danger of carrying a rifle with hammer resting on the rim of a sensitive cartridge? Produce an arm with the rebounding lock, as has been mentioned, and these careless shooters will not even have to think in order to have their rifles safe at all times.

Probably the safest of all arms in the hands of the average shooter, is the hammer gun. Properly understood and handled, however, the hammerless arm is probably as safe, or perhaps safer; but in the hands of the average man or boy I firmly believe that an arm with some form of outside hammer will be usually found the safest. And yet here much depends on the user; he must see to it that the hammer is left at half-cock—an important point to teach the boy, provided there is any one sufficiently interested in his welfare, and that of the community willing to teach him.

In some of the falling-block rifles the hammer is always thrown to half-cock at the first opening movement of the action. This is a good feature, but did you ever stop to think that this is not quite as far as the inventor should have gone? And why? While withdrawing the hammer as the lever is opened is a good feature from a standpoint of safety, this feature will be found absolutely worthless with a firing pin rusted fast in a breech-block. Owner's fault, of course, but the inventor, and manufacturer also, should have just such careless and negligent shooters in mind when designing and manufacturing arms. The absolutely safe falling-block action is the one in which the firing pin is withdrawn at the first opening movement. No chance of a rusted firing pin wedged firmly in the breech block being forced into a primer and exploding prematurely with action unlocked or with the muzzle of the rife pointing at something besides game. If the user always thought to leave the hammer at half-cock this arm would be as safe as necessary. But, as some of us have learned from observation, all do not think, while others do not know enough about their guns to leave the hammers in the safety-notch. For these shooters an action will have to be devised to think for them and this is an easy matter; produce an arm with a rebounding lock which will leave the hammer in the safety-notch at all times except when the hammer is at full-cock. This can easily be worked out and is a matter of sufficient importance to receive the attention of manufacturers.

Perhaps at this point it would be well to mention that the Remington-Hepburn had a rebounding lock that left the hammer in the safety-notch, but this arm is no longer made; besides it was far too heavy for our boys' rifle. Also the lighter weight single shot Winchester lever action rifle has an action in which the firing pin is positively withdrawn at the first opening movement; but this arm weighs around seven pounds and is too heavy for the boy we have in mind, so cannot be favorably considered. The case might be different, however, if the makers cared to supply same with a round, heavily tapered barrel which would cut the weight, possibly, to the specified five pounds, but even then the frame would be unnecessarily large for a rifle such as is desired for the boy we have in mind.

In addition to this suggested boys' rifle having a rebounding lock which should always leave the hammer in the safety-notch, the firing pin should be arranged to make it an impossibility for same to ever strike the edge of the cartridge chamber when the hammer might be snapped with rifle empty. It is true that the gun could be tagged when leaving the factory, "Don't snap hammer with chamber unloaded," just as some of them will now be found when purchased; but this isn't enough, for we know, from plenty of evidence which has often been produced, that many, not always boys, either, will persist in snapping on empty chambers with the result that the

firing pin soon jams the edge of the chamber to our rim-fire rifle until it is next to impossible to insert a cartridge, and this is often attended with danger of the cartridge prematurely exploding. The "burred" chamber can be worked over, it is true, and after this has been done the cartridges will enter as freely as at first. But metal has been removed, the chamber is larger where firing pin strikes, and shells often burst. Then again, mis-fires frequently occur due to the removed metal leaving no place to act as anvil for rim of cartridge to rest. Looking at it from all points, it was unfortunate from the first that the rifle ever left the factory in a condition which made it possible for the firing pin to ever come in contact with the edge of chamber. In our ideal boys' rifle we sincerely desire one in which the firing pin can never ruin the chamber whether the hammer is snapped on same accidentally or by design. In fact, it would be well if the makers made a special point to supply this suggested arm so designed that unlimited snapping practice could be indulged in. This practice is pretty generally becoming to be recognized as of considerable benefit to the marksmen. While I have never indulged in this snapping practice to any great extent with rim-fire rifles, I know from experience that the rim-fire S. & W. target pistols can be snapped this way indefinitely without injury, therefore it is perfectly safe to say that this feature can readily be applied to our perfect boys' rifle, and, in my opinion, should be.

If designing a rifle especially for the use of boys, who, by the way, should have the best rifles possible to produce and sell at a moderate price, there would be two types I would consider. One would be a single-shot, straight-pull action, while the other would be a falling-block, lever action. Without entering into the mechanical features of the bolt action mentioned to any great extent, will mention that it would have the receiver completely filled in when closed; would be strongly locked, while the hammer would be arranged to rebound into the safety notch. And, an important point, the shell would be positively extracted, and when extracted would as surely be ejected.

In the falling-block pattern I have in mind, the hammer would be hung to the breech block and drop down, of course, with the block. There has never yet been a single-shot rifle of this type made in which the hammer was hung to the frame, in which the hammer, in my opinion, has not been more or less in the way at times. This has always been entirely unnecessary. The hammer should be hung to the breech block by all means, and should rebound into the safety notch as a safety precaution. The extractor should positively throw the shell clear of the gun when action was opened.

The barrel should be tapered, as has been mentioned, while, if I am to write exactly as I think, the standard arm should have a rifle stock which would more nearly resemble a rifle at all points than if fitted with a shotgun stock, which properly belongs on the scatter gun. (Lovers of the shotgun butt on the rifle, please notice that the above represent MY views only; you may have a different opinion, and I will not object.)

In the bolt action mentioned, there is one important point I failed to mention: The arm should, and easily could, be arranged to load by merely dropping the cartridge in front of the bolt without paying any attention to entering same into the chamber. The bolt handle should turn down close to the side of the stock and then turn out, while the bolt knob should be larger than any now found on the cheap .22's. The stock should have a full pistol grip, properly shaped, and shoved up near enough the guard to be of some use. For the benefit of those who might prefer the shotgun butt stock, stocks of this kind should be supplied. For prone shooting, such stocks would be preferred, and as much practice work in future will be from this position, swivels for sling should also be provided, but these swivels should be hinged much closer to the butt stock and barrel than is usually the case. Many would have their rifles fitted with swivels if manufacturers would only supply their rifles with the swivels hinged closer to the rifle. I doubt very much if any man living likes the average swivels, or screweyes, either, for that matter, which project farther from the gun than necessary. The neat swivels, or screweyes, are the ones which are attached close to the arm and are the ones we want on the ideal single-shot boys' rifle.

Purchasers should have the privilege of choosing various sight combinations, but as the standard sights would likely be open, I would strongly suggest that they be adjustable for elevation and windage and be of a better design and finish than can usually be found on the boys' rifles at present being made. It is an utter impossibility to produce an open rear sight that will not blur with some shooters, or that, probably, will not blur with all shooters when placed as near the eye as will be necessary on short rifles; but there is absolutely no reason why this suggested boys' rifle should not be equipped with a rear sight which should be practically free from glitter in any light; and if taken care of, I might add, remain in this highly desirable condition indefinitely. A sight possessing this highly desirable feature not having been produced by any manufacturer to date, at least so far as my knowledge goes, it may be rather too much to ask for such a sight on this boys' rifle which, although it would naturally have to sell at a somewhat greater price than any now made, would be less expensive than

many rifles designed for men, none of which have open rear sights equal to the one we suggest for the cheaper boys' rifle.

This suggested boys' rifle would cost rather more than any now made especially for boys' use; but it would be worth more. In my opinion, however, there are thousands of men in the country sufficiently interested in their boys, who are to be the future riflemen of the country, ready to pay the price and see the young shooter started in the shooting game equipped with far better rifles than were to be had when they were boys, and considerably better than any now being regularly made.

While the best of our cheaper boys' rifles are capable of showing much greater accuracy than is generally supposed, and these highly desirable results are often secured with some of these little rifles weighing only three pounds, I think I am perfectly safe in stating that, regardless of all this, there are plenty of boys who desire something just a little better than anything now within their reach; just as there have been, and are, thousands of older shooters who have been asking for something better in the line of full-grown rifles—and they will get what they have been asking for some day, too, I imagine. Show the boy anything inconsistent in his asking for a better light-weight, properly proportioned, absolutely safe, thoroughly accurate single-shot rifle made for the following cartridges: .22 short, .22 long rifle, .22 W. R. F., .25 Stevens' rim rife, and, for the boy who would like something a little more powerful and something he could reload, the .25-20 single-shot cartridge. Prove to him that he has no reason to ask for anything better than can now be had and I will produce plenty of evidence to show that the most cranky of grown cranks should be more than satisfied with some of the many rifles now being turned out for grown-ups.

Black vs. Smokeless Powder in the .25-21

By Alfred Loetscher.

Since the advent of smokeless powder there has been more or less written as to which is superior in our black-powder rifles as ordinarily loaded—black or smokeless powder.

In the revolver it has already been shown that black powder gives better results, but this does not necessarily prove that the same is true in a rifle, as its construction is so far different from a revolver. There is no chance for the gas to leak away as in the case with a revolver, and since it is a well-known fact that smokeless powder requires pressure and heat to burn readily, as is evidenced by our high-power rifles, it can be well expected that smokeless powder would make a better showing in our black-powder rifles than in a revolver.

During the last nine years I have experimented considerably with both black and smokeless powder in a .25-21 Stevens rifle. I did not try any of the dense powders, as my object was to use a smokeless of the bulk type, so as to give the same relative velocity, etc., as would be the case with black powder; consequently, Schuetzen and Du Pont No. 1 smokeless were selected. For black powder F. G. Hazard was used.

Since it is a well-known fact that no two rifles perform exactly alike, a change in the temper of bullets or a few grains of powder, more or less, may sometimes be necessary to obtain the best results. With the above points in view I proceeded to work out such loads as in my judgment gave the best results from the different powders tried, and under no circumstances was a load judged as final until its highest accuracy was shown. During these tests the standard 86-grain bullet was used, as it is supposed to give the most accurate results in the above rifle, using either black or smokeless powder.

After numerous tests of the most accurate loads developed it was found that black powder and Schuetzen Smokeless are practically on a par, while Du Pont No. 1 smokeless is less accurate by about 50 per cent.

Some of the good points possessed by black powder may be mentioned as follows: A far softer bullet can be used with black powder than with smokeless, thus saving considerable wear on the barrel. This can readily be understood when one is sizing bullets, how much harder a hard bullet sizes than a soft one. Black powder is not near as liable to pit a rifle barrel as smokeless. This I found out by very limited experience, as on one occasion I left the rifle about two hours without cleaning after using smokeless powder, and to my surprise found the barrel pitted to such an extent that its accuracy was affected, thus compelling me to get a new barrel.

The Du Pont Powder Company claims that the gases generated by these powders are alkaline, consequently they should not pit a barrel. Some authorities claim that the composition in the primer used to fire the smokeless charge contains an unusual amount of free acid and that this is what really causes the rapid pitting of a barrel. If this is true, one way out would seem to be to use a black-powder primer, then place several grains of fine black powder in the bottom of the shell, followed by the smokeless charge; thus giving the smokeless charge a priming that should not pit a bar-

rel any more than black powder, provided smokeless powder is really not the cause of the rapid pitting connected with its use. I, for one, have no desire to prove these assertions, as it is as liable as not to cost another barrel. It seems the cartridge companies would load their bulk smokeless powder products this way if it really had the effect of overcoming this trouble.

The use of nickel steel barrels is generally supposed to overcome pitting, but according to one of the leading firearms companies the nickel steel barrel, while resisting pitting more than a soft steel barrel is not free from this trouble, unless cleaned within a very reasonable time after firing. Then, too, how many black-powder rifles are equipped at the factory with such barrels? So it behooves the user of a soft steel barrel to clean his rifle soon after using smokeless powder or abide by the results. Right here is where the target shooter has the advantage, as he can clean his barrel as often as is deemed necessary by simply wiping with an oily rag; this will preserve the barrel during the day's shooting, after which it will have to be cleaned with a good nitro powder solvent, repeating the cleaning the next day. Never leave a rifle dirty over night, no matter what kind of powder is used, as a pitted rifle barrel, no matter how slight, will never shoot as accurately as one not pitted.

The advantage smokeless powder has over black is its cleanliness. This is much to be desired, especially in the .22-caliber, rim-fire cartridges, on account of their fouling so easily. It is also very desirable in a hunting rifle, as no cleaning need be done, and if shot frequently (at least every half hour) no damage should result; else, look out!

Other advantages of smokeless powder are: Less recoil and more accurate results in a barrel that is pitted than black powder would give. Schuetzen smokeless is more accurate than Du Pont No. 1 smokeless, undoubtedly caused by its characteristics just suiting the .25-21. The full charge gives a greater velocity than a relative charge of either Du Pont No. 1 smokeless or black powder, the bullet going several inches higher at 100 yards, but as this caused sticking of the shells and a loss of accuracy I reduced the load several grains, so as to give a velocity similar to the full charge of black powder; this overcame both of the above faults.

Du Pont No. 1 smokeless is known as a very accurate powder, and no doubt would show more accurate results in some cartridges than Schuetzen smokeless. By seating the bullet in the barrel ahead of the shell Du Pont No. 1 smokeless has shown wonderful results, as has often been evidenced by the .32-40 and .38-55 target rifles, but unfortunately the method of loading employed is not applicable to a rifle for all-around use.

Hercules Sharpshooter smokeless can also be used in the .25-21 to develop high velocity loads, but for the fact that this smokeless powder developes a high degree of heat and requires extremely hard bullets, it will soon ruin a soft steel barrel. Those inclined to use this powder or the high-velocity cartridges, which are loaded with this powder, should get a nickel steel barrel, which will resist the severe wear better than the common barrel.

Smokeless powder burns slower than black powder, as can easily be seen by igniting the powder on a hot stove; the smokeless burns while the black flashes; therefore, when both powders are confined in a cartridge under similar conditions and then ignited, the smokeless seemingly would burn in the cartridge in relation to the black flashing; this seems true to a certain extent, as is indicated by the heavier recoil of the black powder. On the other hand, why is it that with black powder one can use a softer bullet than with smokeless apparently; the more violent powder should use a harder bullet, but as it is smokeless powder requires a far harder bullet than black powder, yet giving no greater velocity; consequently, smokeless powder burns far different when under pressure than in the open air.

The higher the pressure is in a rifle barrel the faster will smokeless powder burn, resulting in the shells sticking and the primers flattening out if the charge is materially increased. This is caused by smokeless powder setting up a very high local pressure if too much powder is used. The larger the charge of smokeless powder is the higher will be the pressure developed and the faster will it burn; consequently, in case of an overcharge with smokeless powder (especially dense smokeless) the gases are generated so rapidly that before the bullet can be started the pressure will run up very high, probably bursting the barrel. Under such conditions smokeless powder really explodes instead of burning by progression, as it is intended to do.

Black powder burns by progression; starting to burn at the rear end of the charge it shoves the unburned powder and the bullet ahead with an ever-increasing speed, until it is all burned, thus by distributing the pressure more along the whole barrel no trouble is experienced with shells sticking and primers flattening out against the breech block, even with very heavy charges.

The loud report of black powder is undoubtedly caused by its progressive burning, thus creating a heavier pressure at the muzzle of the rifle, while smokeless powder, though slow at the instant of ignition, apparently exerts most of its force soon

thereafter and less at the muzzle, thus producing a lighter report. This must be true to some extent at least, as is substantiated by the fact that a comparatively short barrel can be used with smokeless powder and still get its full energy.

The heavier recoil of black powder is caused by the way it burns. The quick ignition and progressive burning of black powder gives the rifle quite a thrust, thus gaining momentum and causing heavy recoil; while, on the other hand, the slow ignition of smokeless powder apparently gives the rifle a quick, short shove, which cannot cause much momentum, consequently light recoil. The free recoil of black powder is on an average about 30 per cent greater than its equivalent of bulk smokeless powder; this, however, is not true of rifles below .32 caliber, where the difference amounts to only 15 per cent.

Black powder gives somewhat greater breech pressure with the standard load than its equivalent of bulk smokeless powder. This difference, however, is reversed if the charge of both is materially increased, as is evidenced by the shells sticking with smokeless powder.

By summing up it will be seen that smokeless powder is practically as accurate as black powder, provided the right kind is used; it also gives greater cleanliness and less recoil; but, on the other hand, it is harder on the barrel and much more liable to pit it than black powder; therefore, all things considered, the rifleman who values a spotless and long-lasting rifle bore cannot do better than stick to old black powder, which has served us so long and well.

Referring to the accuracy of the different loads used in the .25-21, many might be interested in the method of loading employed and the size of groups obtained. The black-powder load is as follows: 20½ grains F. G. Hazard; 86 grains Ideal bullet No. 25720, 1-35, lubricated and sized to .257, with an Ideal lubricator and sizer; U. M. C. shells sized at the muzzle; No. 1½ U. M. C. primers; powder charge measured with the Ideal powder measure No. 5; powder tapped to its greatest density with a steel rod, three inches long, set upright in the shell, and with a similar rod the shell is struck several times, after which the lubricated bullet is seated so two bands project from the shell, with an Ideal No. 3 special tool.

The smokeless-powder load is as follows: 18 grains Schuetzen or 20 grains Du Pont No. 1 smokeless, loaded with the Ideal powder measure No. 5; 86-grain Ideal bullet No. 25720, 1-15, sized and lubricated with an Ideal lubricator and sizer, so as to shut off all gas; U. M. C. shells sized at the muzzle; No. 6½ U. M. C. primers; one wad on the powder; bullet seated in the shell two bands out. Various combined loads of black and smokeless powder were tried, but I was unable to get one that was equal to the straight loads.

The following groups were shot from a home-made rest, better known as a six-point rest. A good machine rest undoubtedly would show better results.

Before proceeding, however, I wish to mention the fact that so many shooters refer to their rifles as "it shoots very accurate," instead of giving the actual size of the groups in inches. Recently an article appeared in this magazine referring to the superior accuracy shown by the .25-20 high-velocity cartridges over the black-powder cartridges, but no mention was made as to the size of groups obtained nor the distance shot at. Now, this is all rather disappointing to a real rifleman, as his desire is to see what other riflemen accomplish and how their records compare with his, so please state the size of groups obtained.

At 100 yards the average groups for black powder is about 1½ inches in diameter (measured from inside of bullet holes farthest apart) shot in strings of five shots each, no cleaning during each string; occasionally, under favorable conditions, I have secured groups of ¾ inch in diameter.

The average groups for Schuetzen smokeless at 100 yards is about 1⅝ inches in diameter, while under favorable conditions groups of 1⅛ inches have been obtained.

The Sharp-Shooting Kentuckians

By Robert Page Lincoln.

Great interest was riveted but lately upon the skillful manipulation of the pistol used in the Kentucky turkey matches, in which some rather phenomenal scores were the result, putting, as it did, the shooting world on edge. This brings to mind the wonderful keenness and shooting ability of the early Kentuckians, the backwoodsmen who held the border against the inroads of the redmen. There is little doubt but that these early settlers were a production like which the world has never seen. The very nature of their life, at constant combat with the savages, made rifle shooting with unerring accuracy an accomplishment that had to be fulfilled, assured, in that struggle for supremacy, the holding of the hard-earned soil. When we consider the immense pressure that was brought to bear upon these pioneers by all the allied Indian tribes and the English during the Revolution, and later the Northwestern Indians who joined with

the allied tribes to wipe out the mere handful of white men along the border, is it not a wonderful thing that this border was held against these depredators. Therefore, it is not but that we wonder at the exceptional degree of marksmanship in which they were so proficient. Perhaps very few of the audience have read the works of Audubon. I have excerpts at hand that are surely of worth, and I have, therefore, asked the editor to give them space. Audubon, in the course of his wanderings, wrote:

"We have individuals in Kentucky, kind reader, that even there are considered wonderful adepts in the management of the rifle. To drive a nail is a common feat, not more thought of by Kentuckians than to cut off a wild turkey's head at a distance of a hundred yards. Others will bark off squirrels one after another until satisfied with the number procured. Some, less intent on destroying game, may be seen under night snuffing a candle at the distance of fifty yards, off-hand, without extinguishing it. I have been told that some have proved so expert and cool as to make choice of the eye of a foe at a wonderful distance, boasting beforehand of the sureness of their piece, which has afterwards been fully proved when the enemy's' head has been examined!

"Having resided some years in Kentucky and having more than once been witness of rifle sport, I shall present you with the results of my observation, leaving you to judge how far rifle-shooting is understood in that state.

"Several individuals, who conceive themselves expert in the management of the gun, are often seen to meet for the purpose of displaying their skill and betting a trifling sum, put up a target, in the center of which a common-sized nail is hammered for about two-thirds of its length. The marksmen make choice of what they consider a proper distance, which may be forty paces. Each man cleans the interior of his tube, which is called 'wiping it,' places a ball in the palm of his hand, pouring as much powder from his horn upon it as will cover it. This quantity is supposed to be sufficient for any distance within a hundred yards. A shot which comes very close to the nail is considered as that of an indifferent marksman; the bending of the nail is, of course, somewhat better; but nothing less than hitting it right on the head is satisfactory. One out of three shots generally hits the nail, and should the shooters amount to half a dozen, two nails are frequently needed before each can have a shot. This is technically termed 'driving the nail.'

"Barking squirrels is delightful sport, and in my opinion requires a greater degree of accuracy than any other. I first witnessed this manner of procuring squirrels whilst near the town of Frankfort. The performer was the celebrated Daniel Boone. We walked out together and followed the rocky margins of the Kentucky River until we reached a piece of flat land, thickly covered with black walnuts, oaks and hickories. As the general mast was a good one that year. squirrels were seen gamboling on every tree around us. My companion, a stout, hale and athletic man, dressed in a homespun hunting shirt, bare-legged and moccasined, carried a long and heavy rifle, which, as he was loading it, he said had proved efficient in all his former undertakings and which he hoped would not fail on this occasion, as he felt proud to show me his skill. The gun was wiped, the powder measured, the ball patched with 600 thread linen and the charge sent home with a hickory rod. We moved not a step from the place, for the squirrels were so numerous that it was unnecessary to go after them. Boone pointed to one of these animals, which had observed us, and was crouched on a branch about fifty paces distant and bade me mark well the spot where the ball hit. He raised his piece gradually until the bead of the barrel was brought to a line with the spot which he intended to hit. The whip-like report resounded through the woods and along the hills, in repeated echoes. Judge of my surprise when I perceived that the ball had hit the piece of bark immediately beneath the squirrel and shivered it into splinters, the concussion produced by which had killed the animal and sent it whirling through the air as if it had been blown up by the explosion of a powder magazine. Boone kept up his firing, and before many hours had elapsed we had procured as many squirrels as we wished; for you must know that to load a rifle requires only a moment and that if it is wiped once after each shot it will do duty for hours. Since that first interview with our veteran Boone I have seen many other individuals perform the same feat."

Because of interest in the subject, and the seeming impossibility of these feats I will add a few more side-lights upon the subject. One man quotes a paper in Georgia, dated 1818, as having printed the following under a heading of "Sharpshooting":

"The Americans are unquestionably the most expert gunners in the world; of this we recently had a most convincing proof. A shooting match between a party of gentlemen from Baldwin and another from Jones, with rifles, one hundred yards, three on a side, for $1,500, commenced near this place on Thursday last and continued with various success till late Saturday evening. The latter beat every match—one with ease, the other two were closely contested. About 350 balls were fired during the three rubs (best 31 in 60), four out of five of which we are informed, struck a circle of three inches in diameter. Each shot would have

killed a man and many were within half an inch of the center of the target. Well may all enemies dread American riflemen. As sharpshooters they are unrivalled."

Although the above may be called exceptional shooting, what then shall we make out of Audubon's comment, and that of driving the nail? Audubon has been found as being one of the foremost outdoor observationalists in the world; his pen has been lauded for its accuracy, and that he has here spoken the truth, as he saw it done, we must believe. Undoubtedly, in the last recorded match, the guns used were the Kentucky, four-foot barreled, flint-lock rifles; as a matter of fact, also, in the last recorded match the shooting must be considered as off-hand, though no information is given on the point. The quoter of the above newspaper clipping says:

"I believe a fine muzzle loader carefully wiped and loaded with attention to properly-made bullets and patches and every little detail may be slightly superior to the breech-loader, or at least the earlier rimfire breech-loaders, up to 100 yards. I do not think that, as usually used, it is as accurate as the breech-loader with factory cartridges, if kept clean. Yet I believe that nine men out of ten will do better shooting with the old muzzle loader at distances under 100 yards than they would with a breech-loader, as usually made, and both having open sights. If you have a front sight 1/32 of an inch in diameter at 22 inches from your eye in one case and in the other case a sight 1/16 of an inch in diameter at 44 inches from the eye, they ought to cover up the same space on an object and give the same shooting. But in practice the larger sight at double the distance will be both seen clearer and caught quicker. In fact, the finer sight would actually be seen quicker and clearer at the end of a long barrel than of a short one. This is due to the fact that the eye, being focused upon the target at a distance, is better adapted to focus the sight at the same time if farther from the eye."

Peculiar of the old Kentucky rifle was the fact that its recoil was not great, since the barrel, being heavy, took up the recoil in its bore with but slight concentration upon the stock, as different from the breech-loader, with heavier charges, heavier stock and action paraphernalia which imparted a recoil throughout those parts never associated with the muzzle loader of the Kentucky style. The Kentucky rifle, by reason of its recoil-absorbing long barrel was held comparatively light to the shoulder and easily in the hands. The breech-loader, breeding as it did a natural inborn desire to flinch, also remembering its kick, was held tight both in hand and to the shoulder. There is little doubt but that the muzzle-loading flint-lock Kentucky long barrel bred, first, a great deal of confidence in its user. He knew that it would not kick to any wrenching extent.

That remarkable things have been done with the old Kentucky rifle goes without the saying. Louis Wetzel was famous along the early border as an Indian hunter. He hunted Indians and was paid for their scalps as we are now paid for wolf ears. So proficient did he become with the rifle that he could load this unwieldy affair as he ran, still keeping up, mind you, a breakneck speed, swinging when he was ready and dropping his game in its track. The Indians feared Wetzel like hornets. They said: "Him gun always loaded."

When the great Emperor Napoleon heard of how Andrew Jackson, at the head of a hastily-organized handful of Kentucky and Tennessee sharpshooters had beaten back Parkenham and his prim veterans at New Orleans with fearful loss, he was astounded. He condemned it as a lie. The American ambassador to France was called for and asked proof. It was given. Napoleon surveyed the long-barreled Kentucky rifle with the utmost curiosity, and listened in rapt attention to the tales of American marksmanship. He said: "With a company of such men I would have Europe at my mercy!"

A Proposed Auto Pistol

Editor Outdoor Life:—Having experiment-with the various makes of auto pistols (of .38 caliber and larger) for the past number of years, and having found none that was satisfactory for an all-around heavy belt gun, I have conceived an idea which I will endeavor to explain through the accompanying drawing, which, I think, would outclass all autos now on the market. The reasons for this are as follows:

(1) There is not an auto made in the world with the barrel screwed solidly in frame, as mine would be.

(2) There is not an auto in the world guaranteed absolutely accurate, which mine could be.

(3) There is not an auto in the world that shoots the .45-255 Colt smokeless shell, which is the most powerful; mine would be made to shoot same.

(4) There is not an auto in the world with a longer barrel than 6 inches; mine would be 8 inches.

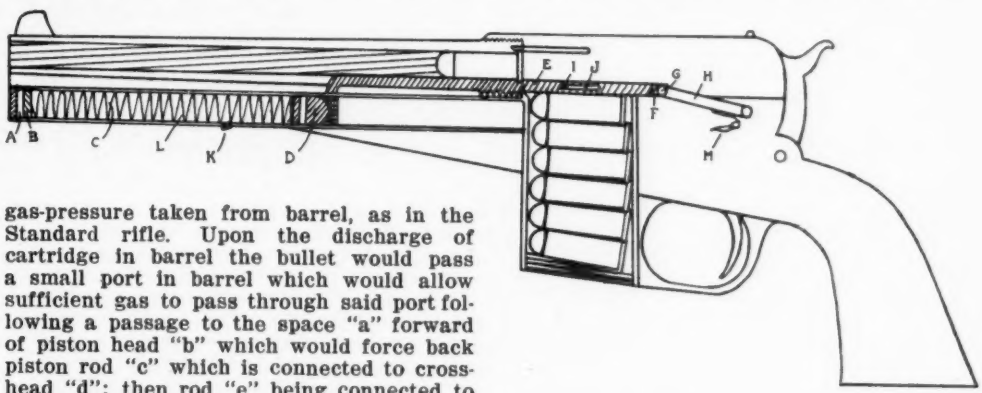
(5) There is not an auto in the world with a butt and hammer like the Frontier Colt, as mine would have.

(6) There is not an auto in the world that is as quick for the first shot as the Frontier Colt; mine would be exactly the same.

(7) There is not an auto in the world built on the lines of a revolver, as mine would be.

(8) We have not an American auto with the sights on the barrel, but on a slide over the barrel; mine would have sights solid on the barrel.

The balance of pistol to be as near as possible to that of the '72 model Remington six-shooter, the action to be worked by



gas-pressure taken from barrel, as in the Standard rifle. Upon the discharge of cartridge in barrel the bullet would pass a small port in barrel which would allow sufficient gas to pass through said port following a passage to the space "a" forward of piston head "b" which would force back piston rod "c" which is connected to cross-head "d"; then rod "e" being connected to cross-head would be forced back and the sloped-up end of same at "f" would force down the pin "g" which is part of breech-block lock "h."

Then the lock "h" being forced down out of the way, rod "e" would continue to move back till pin "i" in same butted against rear end of slot "j" in breech-block, which would then in turn be forced back, cocking hammer and ejecting empty shell, the gas in cylinder at "a" then escaping to atmosphere through port "k" releasing the pressure forward of piston "b" and the coil spring "l" would force piston forward to its normal position, which in turn would move the reciprocating parts forward till the pin "i" in rod "e" butted against the forward end of slot "j" in breech-block, which would move same forward, forcing a new cartridge into barrel.

When breech-block reaches its normal position a spring "m" will force lock "h" up, securely locking breech, the gun then being loaded and cocked.

To pump in the first cartridge the action can be worked by pressure of thumb and finger on cross-head "d." If desired to use as a repeating pistol a small plug valve could be put in gas passage to turn off gas. The breech-block and shell-extractor would be on the same principle as the '92 model Winchester. The rear sight could be placed on breech-block; the empty shells could be made to eject out of top and a little to one side. The magazine would be made to hold at least six cartridges, though for military use it could be made to hold twice that many.

Smokeless loads would be the best, as black or semi-smokeless would gum up the gas passage. The gun could also be made to handle the .38 Special cartridge on account of it being a straight shell. The trigger arrangement would be similar to that of the old-style .45 auto Colt. The magazine would be shoved in from bottom. The trigger pull could be made to about three pounds with no creep or long drag as in other pistols.

Now get busy, some of you gun cranks who have the time, tools and machinery, and make one of these guns, and after you have sold your patent for a few thousands, all yours truly asks for is a pair of the pistols as a present in return for the idea.

I would further advise Chauncey Thomas not to file the sights off his guns, for I think that he and I back to back and each armed with a pair of these pistols could at least let those lynchers know that we are in town.

A. A. THOMAS.

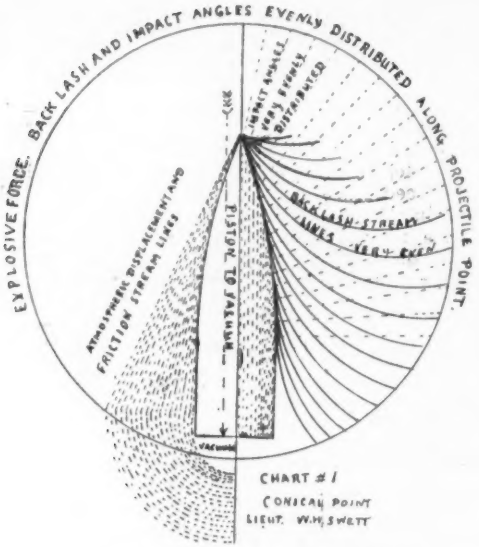
Minnesota.

Some Studies in Air Resistance

Editor Outdoor Life:—I am enclosing a couple of charts that may and may not be of interest to readers of Outdoor Life and yourself.

Chart No. 1 illustrates on the left the atmospheric displacement and the friction stream lines.

I have endeavored to illustrate clearly


EXPLOSIVE FORCE. BACK LASH AND IMPACT ANGLES EVENLY DISTRIBUTED ALONG PROJECTILE POINT.
IMPACT ANGLES VERY EVENLY DISTRIBUTED
BACK LASH STREAM LINES VERY EVEN
PISTON TO VACUUM
ATMOSPHERIC DISPLACEMENT AND FRICTION STREAM LINES
VACUUM
CHART # 1
CONICAL POINT
LIEUT. W.H. SWETT

the manner in which the velocity is checked, and the energy is absorbed by the air. The arrow drawn lengthwise of projectile pointing to the rear end where vacuum is created by forward motion of projectile illustrates the atmospheric pressure created. The projectile occupying the same position it would occupy in a vacuum pump as a piston head.

This backward pressure is constant as long as the velocity is sufficient to create a vacuum, but of course to a lessening degree as a vacuum decreased from a positive to a partial vacuum. This pressure is also affected by altitude, it being greatest at sea level.

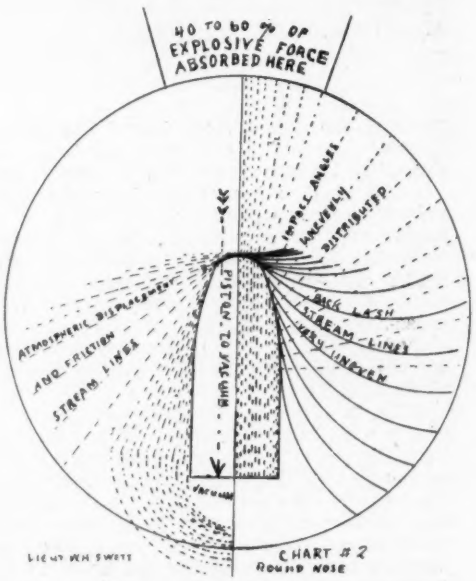
On the right we note the dotted lines illustrate the even distribution of the impact angles, showing how the energy of the moving projectile is absorbed by the moisture and tissue of any object struck. The same lines illustrate the compression angles exerted on the projectile which produce the breaking up of the missile so necessary at all ranges to give the greatest amount of shock. The higher the velocity, the more positive are the results herein illustrated, as may be readily understood by the veriest novice or amateur.

On the same side we have the heavy "back lash" lines showing how both the tissue and moisture are thrown back on the surrounding surface, greatly increasing the area of shock and destruction.

Now, when you add the increase surface covered by these "impact" and "back lash" angles to the volume of water and fat that is decomposed along the surface of projectile, we have the increase efficiency of approximately three to five in favor of the conical projectile at all ranges beyond where the velocity is under 2,400 foot seconds, weights and cross section areas being equal.

Chart No. 2 illustrates the action of the different influences on the blunt-nose projectiles.

By a study of these lines we note there is a greatly wider field of atmospheric disturbance, and that the friction stream lines are massed along the extreme "bow" of our instrument of destruction, thus rapidly re-


40 TO 60 % OF EXPLOSIVE FORCE ABSORBED HERE
IMPACT ANGLES UNEVENLY DISTRIBUTED
BACK LASH STREAM LINES VERY UNEVEN
PISTON TO VACUUM
ATMOSPHERIC DISPLACEMENT AND FRICTION STREAM LINES
VACUUM
LIEUT WM SWETT
CHART # 2
ROUND NOSE

ducing it to the power of the "putty gun."

We also note that our impact angles are massed at nose or extreme end, and that the "back lash lines" are greatly reduced in volume and intensity, reducing very greatly the disturbed area of destruction so necessary to "fix" the game in its tracks and lessen the great number of cripples.

California. LIEUT. WM. H. SWETT.

The Sawins Copper Shot Bullet Again

According to Mr. H. V. Wright of Quebec, who in the March Outdoor Life criticized an article entitled, "The Sawins Copper Shot Bullet," written by me in the November number, it would seem that I like our friend, Chauncey, am expected to eat crow, since I have so unwittingly killed one in the belief that it was a game bird.

Now I may be all wrong, but I try never to bark up a tree unless a squirrel has at

least been up there, and I meant just what I said when I stated that, "The sincerest regret of the big game hunter, is that not a single high velocity bullet is yet on the market, which can be depended upon to hold together and to produce a constant and deadly effect upon large game at all ranges." This is so self evident and so coincident with the experience of our best informed hunters that it does not seem to call for any further discussion.

Mr. Wright quotes further and criticises, "The soft-nosed bullet with exposed lead at its point, is too erratic in its effect and cannot be used at all in the high velocity guns." "The game killing effect of the U. S. Service cartridge even at two hundred yards, is questionable."

A soft nosed bullet with exposed lead at its point cannot be used in a high velocity gun, because the lead would melt and the point be thrown off a few feet from the muzzle of the gun. Mark you, I spoke of lead point, not of a core made of alloy or composition. The best killers we have in the high velocity bullets at present are of the soft nosed spitzer form, with a core of lead alloy, the fusing point of which is raised to correspond to the velocity with which they are to be fired. Even their points sometimes melt and leave the rest of the bullet. It is out of the question to use a soft lead point at high velocity.

Even when round soft nose bullets are used at a low velocity, 2,000 foot seconds, or there about, the effect is erratic, sometimes going through without tearing much, and sometimes tearing much without going through. Sometimes it will go pretty much to pieces and sometimes it will stay pretty much together, depending upon three conditions: the composition of the soft point its velocity when it strikes, and the kind of tissue it passes through. Therefore, the soft nose bullet is too erratic in its effect, I mean its killing effect. The subject under discussion now is the killing effect of a bullet on large game and has nothing to do with hitting bull's-eyes at five hundred yards with a .22 Savage.

The U. S. Service bullet is a full jacketed spitzer. There is no other service bullet nor cartridge and this was the one under discussion. There is no soft nose Service bullet. Private companies make soft nose cartridges that may be used in the Service rifle, and these are excellent killers under certain circumstances, but my statement had nothing to do with these. "The killing effect on big game of the U. S. Service cartridge at two hundred yards is questionable."

Our friend at Quebec then hovers for a long time over the ".22 Savage Hi-power" and finally settles down on the statement that "this is big enough for the biggest and fiercest game in America." The .22 Hi-power is a splendid little cartridge and large animals may be killed with it, so may they be killed with a bow and arrow. But the .22 was not intended for large game and is not a big game cartridge. Therefore, I left out of consideration altogether the .22 Hi-power Savage.

So if Mr. Wright will get "on" he may see "where I get off."

Wash. A. H. SAWINS, M. D.

Mr. Smith Gives Further Instructions On Constructing His Home-Made Telescope

From Our March (1915) Number.

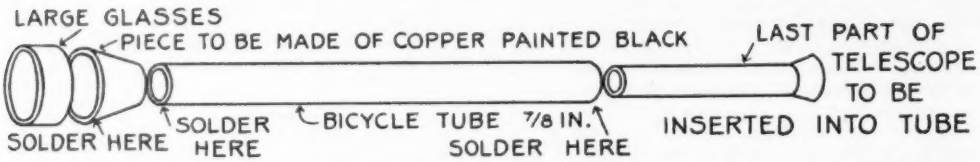
Editor Outdoor Life:—My favorite gun for coyote hunting is the Winchester model '94, .25-35, with which I interchange the telescope from my boy's .22 to my .25. I made my 'scope out of a common black beauty telescope, purchased from Montgomery, Ward & Co., for $2.75, and fitted it up in steel bicycle tubing; the cross hairs are 1-12 of a silk thread. If anyone of your readers would like the exact method of getting a good telescope sight with a large field and great definition I would be pleased to give you the exact ways of making it over. Mine is sure 15-power. I can see the windows in the Delano high school, twenty-one miles from here, and can see a ground squirrel one and one-quarter miles away and tell what it is.

C. E. SMITH.

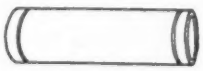
Mr. Smith's finished telescope sight, 16 in. long.

Since the above article written by me appeared in your March number I have received letters from all over this continent asking for further particulars about how I built the 'scope in question, and rather than answer all these questions personally I thought it best to tell of the "how" through Outdoor Life:

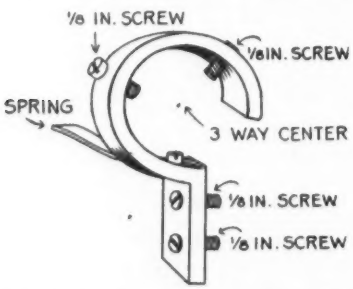
To begin with, will state that two years ago I sent to Montgomery Ward & Co. and purchased a telescope, Black Beauty (Catalog No. 3N6105), 15-power; price in Catalog


LARGE GLASSES
PIECE TO BE MADE OF COPPER PAINTED BLACK
LAST PART OF TELESCOPE TO BE INSERTED INTO TUBE
SOLDER HERE
SOLDER HERE
BICYCLE TUBE 7/8 IN.
SOLDER HERE

No. 83 is $3. I then focused this instrument to my eye; then took the measure of 'scope extended as focused. Next took off the big glasses in front by unscrewing. These two glasses are fitted into a small part by themselves. Then I removed the next piece, being the outside corner of the telescope;



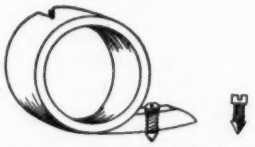
then removed the next two draw tubes, leaving the last tube with the eye glass and two other glasses in it. This part does not have to be torn apart. I fitted this piece into a piece of bicycle tubing, soldering around



Rear mounting for Smith improvised 'scope on .25-35 Winchester.

the end, but not putting any solder on the threads of the eye piece; next I made a funnel-shaped piece out of tin or copper, to solder on the muzzle and then soldered on the piece with the big glasses in.

To put in cross-hairs, use glue and 1/12 fine black silk thread; remove by unscrewing eye piece; pull out eye glasses, remove front glass, put glue on four sides of aperture, then lay your cross-hairs. You may not succeed the first time, but keep on trying and you will not regret it. Be sure and



Front mounting, 1 piece, 7-8 hole; tip wedge-shaped to be dovetailed in barrel, and set screw to keep tight. (Point screw.)

focus the telescope to your eye before tearing it down. Next measure it and cut your bicycle tubing to this measure. In regard to the mountings, here is the rear mounting for the .25-35 Winchester to be mounted on side:

I will make full sheet drawings of these two mountings; I made the two in two hours. Tap telescope for small screw to work in "V" slot in front mounting. You can true the cross-hairs by turning the eye glass tube.

C. E. SMITH.

California.

Mr. Newton's Ballistic Figures

Editor Outdoor Life:—On page 469 of November Outdoor Life is a table giving a list of certain cartridges with spitzer, or pointed, bullets, and giving ballistics of same. There are certain figures in that table that I can not quite place. They may be all right, but it seems to me that Mr. Newton must have made a mistake. In that table he gives:

.256 Newton	123 gr.	C =	.464
.280 Ross	145 gr.	C =	.457
.30 U. S. G.	150 gr.	C =	.389
.30 Adolph	150 gr.	C =	.389
.30 Adolph[2]	172 gr.	C =	.491
.33 Adolph	200 gr.	C =	.395
.35 Adolph	200 gr.	C =	.40
.40 Adolph	300 gr.	C =	.373
.40 Newton H. P.	300 gr.	C =	.374

I do not know where Mr. Newton got the values for "C" in the above, but it is impossible for me to duplicate them with the data at hand. As it may be interesting to the readers of Outdoor Life, I will give my mode of computation in full, with explanation of terms:

"C" is ballistic coefficient, denoting the power of the bullet to overcome air resistance, and is used as a factor, by means of which certain values in ballistics are made applicable to projectiles and atmospheric conditions which differ from the standards.

It is to be noted that "C" varies inversely as the retardation, and hence measures the ability of the projectile to maintain its velocity. As the weight of the air to be dis-

placed by a projectile per unit of travel will vary directly as the density of the air and as the area of cross section of the projectile, the retardation will vary as these factors. Since the retardation of a projectile acted upon by a given force will vary inversely as the weight of the projectile, "w" will enter into the computations as a direct factor in the expressions for "c."

The factor "c," called the coefficient of form, also enters into all computations and is generally determined by experiment, but the following formula will give its value for an ogival head (spitzer bullet).

$$(1)\quad C = \frac{2K}{n}\sqrt{\frac{}{\frac{4n-1}{7}}}$$

In which,

n = radius of ogive in calibers.

k = a constant which is ordinarily unity, but which is generally determined experimentally and thus compensates for any peculiarity of conformation not attributable to the radius of the ogive. In experimental firing of .30 U. S. G. the factor K has been found to be +1, or unity, and as such will be used in all of the computations here given.

When we say that under a given set of atmospheric conditions a projectile has a ballistic coefficient of 10, we mean that it will suffer a loss of velocity of only 1/10 the rate suffered by a projectile of standard form, weight and caliber, under normal atmospheric conditions.

The ballistic coefficient of the standard projectile under normal conditions is represented by the equation

$$(2)\quad C = \frac{w}{cd^2}$$

In which,

w = weight of projectile in pounds.

d = diameter of bullet in inches.

c is called the coefficient of form and relates merely to the shape of the head of the ogive.

Since in the bullets of the .256 Newton, .30 U. S. G. and .30 Adolph the ogives are struck with a radio of 7 calibers, it will be taken for granted that the rest of the list are of the same form, and thus in all computations in this article is =7.

Then from (1) $c = \frac{2}{7}\sqrt{\frac{4(7)-1}{7}}$

$= .5611$

Substituting this value in equation (2)

and $C = \frac{w}{.5611\,(d^2)}$

For the .256 Newton:
w=123 gr. = .01757 lbs.
d=.256 in.
∴ C=.4778.

For the .280 Ross:
w=145 gr. = .02071 lbs.
d=.286 in.
∴ C=.4679.

For the .30 U. S. G.:
w=150 gr.=.02143 lbs.
d=.308 in.
∴ C=.4041.

For the .30 Adolph:
w=150 gr.=.02143 lbs.
d=308 in.
∴ C=.4041.

For the .30 Adolph No. 2:
w=172 gr.=.02457 lb.
d=308 in.
∴ C=.4633.

For the .33 Adolph:
w=200 gr.=.02857 lbs.
d=.338 in.
∴ C=.4463.

For the .35 Adolph:
w=250 gr.=.0357 lbs.
d=.358 in.
∴ C=.4964.

For the .400 Adolph:
w=300 gr.=.04286 lbs.
d=.408 in.
∴ C=.4588.

For the .40 Newton H. P.:
w=300 gr.=.04286 lbs.
d=.408 in.
∴ C=.4588.

In the above figures it has been considered that all of the bullets have a diameter .008 inches larger than the designated caliber, as most of our rifles have a depth of rifling = .004, excepting the .22 H. P., .25 H. P. and .280 Ross, which have a depth of rifling = .003 inches.

The above formulas are taken from the works of some of our foremost authorities on ballistics as they are given and used in their books.

I would not want to "swear" that Mr. Newton's figures were not right, but they don't correspond with the ones I give, so would like to have him explain how he got them.

BILL.

Wyoming.

Note by Mr. Newton: Traditionally there are many ways to skin a cat, and we all have our preferences. The writer follows the method of computation of the ballistic coefficient used by the British war office.

This formula is $C = \frac{w}{d^2 n}$, in which "W" is the weight of the bullet in pounds, "d" is the diameter of the bullet in inches, and "n" is the "coefficient of form," or, in plain English, the sharpness of the point. This latter element is expressed by our ordnance department as "c." "W" is easily and accurately determined. With "d" we may take either the bore of the rifle, the diame-

ter across the grooves, or may, as many do and as the writer did, take the bore diameter plus the height of one land. Thus with a .30 caliber bullet "d" equals .304 inch. As to the value of "k," "Bill" has correctly transcribed the language of the text books used at West Point, but we stand ready to donate a "reward of merit" card to anyone who can tell us in plain English what it means.

Our ordnance office determines the value of "c" as we term it, or "n" as our British cousins term it, by actual firings over different chronograph ranges. As a result the "c" value of the service bullet is .59 and the ballistic coefficient is .389 plus a string of highly immaterial decimals added.

The table for the 150-grain service bullet was based upon this proven value of "C." The 170-grain .30 caliber bullet was the U. M. C. "pencil point" target bullet and has a better coefficient of form. The larger bullets have points not so sharp, hence an inferior ballistic coefficient in proportion to relative weight. The assumption of our friend that all bullets had the same shape of point was therefore incorrect and he was thus misled. And we might be asked to explain "cause why" we did not make them as sharp as the smaller. Here it is:

The .30 caliber cartridges are as powerful as one would wish to fire from the prone position, hence as powerful as are adapted to extreme long range work. Therefore in the others there is no need for extreme ranging powers. This, however, would be no objection to making them sharp, but there are two other objections.

First.—The larger the diameter the longer must the point be to obtain the same degree of sharpness; thus because the base of the cone, as it were, is wider. This would make the .35 caliber bullet over 1½ inches long, if any material amount of bearing were left on the sides. This means a longer cartridge, calling again for a longer magazine and making the action unduly long. The Jeffery .333 bullet in spitzer form weighs 250 grains and measures 1 7-16 inches long. It was deemed better to use a shorter bullet and cartridge at the expense of a little ranging power, since one must either make a specially long action (tools cost $10,000 or over) or make the actions all long enough for the longest.

Second.—The sharper point means greater weight. The proper bullet weight with which to develop 3,000 f. s. velocity is about 2,300 grains per square inch of cross section. Anything heavier must be driven more slowly. With our larger calibers we must have the same length of bearing to insure accuracy as with the smaller, which brings us to the "shoulder" of the bullet with the same relative weight. Then if we put on a point as sharp as on the smaller it is much longer and the bullet is over weight and too slow. Therefore we shortened the point somewhat, making the bullet blunter.

In the figures quoted by your correspondent the .35 has a better ballistic coefficient than the .33 caliber. This is due to the fact that the bullet is heavier in proportion, which likewise has the result of cutting down the velocity to 2,975 f. s.

An Elongated Smith & Wesson

We more or less frequently see a specimen of the Colt and other makes of revolving rifles, but these are practically all of the powder and ball type.

The writer is the possessor of a Smith & Wesson revolving rifle. This arm has an 18-inch barrel, a very easily and quickly detached walnut stock, 3-inch drop, 12 inches in length over all, with checked rubber buttplate, making when attached a stock length of 14¼ inches. Has forearm and grip of beautifully mottled red and black hard rubber, checked, and a two-leaf rear and knife-blade front sight.

The weapon is in excellent condition and uses the regular .32-44 revolver cartridge, with bullet seated deep in the shell. This is an extremely accurate cartridge and is made by all the large cartridge companies today. The arm and stock when detached pack into a brass-mounted case, with handle, similar to the cases for automatic shotguns.

R. R. SMYLIE, JR.

Colorado.

The Need of Rifle Practice For The Soldier and Citizen

Editor Outdoor Life:—That Lord Kitchener, head of the British war office, considers good marksmanship the most essential asset to a soldier's efficiency, is borne out by the fact that in his recent declaration referring to the training of recruits for a second army he said: "Teach the men how to shoot straight and see that each individual knows how to handle his rifle well. I care not whether he knows his right foot from his left; this makes little difference."

And some of our congressmen speak of raising a million men in a night for field service. They seem to think that all they need is a uniform and a rifle and they are ready for business. The whole thing is absurd. This sort of an organization would amount to little more than a mob. They

would not lack in patriotism, but to send such a mob to the front would be a crime. There is no question but that being able to shoot straight is the most essential requirement of a soldier. Modern firearms require months of study in order to familiarize yourself with them properly. To know your rifle and sights is equivalent to the carpenter knowing his square. The Boer war proved to the world that good marksmanship and not drilling triumphed over everything else in battle. Some countries still promote drill, and not shooting, holding that the latter is not so important, notwithstanding the abundant proof we have from the Boer and British conflict.

For further proof: The general public believes that because a policeman is armed with a six-shooter he must be a crack shot, when the truth of the matter is the average policeman would be better off with a brick in his hand, for the public is in danger every time he starts to shoot. The policeman is not to blame for this condition. It is the administration under whose jurisdiction he is serving. Many cities, realizing that straight shooting in the police department is a valuable asset, are now having regular practice once each week, and good marksmanship is considered along with other requirements of a policeman's efficiency.

Our National Rifle Association and United States Revolver Association are both doing a wonderful lot of good toward the promotion of good marksmanship. The National Rifle Association is allied closely with the War Department and recently obtained the passage from Congress of measures authorizing the issue to affiliated rifle clubs, rifles and ammunition, so that in case of war our citizens would have some knowledge of the game and care of a military arm. While the Springfield is not issued to clubs, the Krag, a mighty good substitute and almost as powerful, having practically the same sighting, etc., is issued instead, which will give the citizen soldier an opportunity to familiarize himself with it.

The above law only went into effect last April, and already we have more than fifty organized rifle clubs throughout the country. The cost of military ammunition in the past has made practice prohibitive, but now the Government again comes to the aid by offering the .30 caliber ammunition for the Krag at $15 per thousand, a price unheard of before. This new movement should promote the game. The next problem for the Government to work out is a matter of rifle ranges. Owing to the immense range of the .30 caliber rifle, desirable ranges accessible to the city is a problem. The Government should complete its work by providing at least a range for each state, and hold annual contests among the citizen soldiery. This, more than any other one thing, will develop the game rapidly and do a great deal toward the efficiency of desirable men for Uncle Sam.

A. H. HARDY.

Colorado.

Note.—The Government at the present time sells the latest model of Springfield rifle to members of affiliated rifle clubs at $12.25, and the cartridges for it at $2.50 per hundred.—Editor.

Killing Power Of The Ross

Editor Outdoor Life:—I want to say a word about the Ross rifle, which may be of interest to a great many of your readers, and will answer some of the queries I have noticed from time to time about the killing power of the Ross on big game.

This is something I wanted to know for a long time, but could get only meagre reports. But last fall I took out a party that had the Ross rifle .280 caliber, and a friend loaned me his to take along so I could try it out.

Well, the man I took out was 76 years old; he had hunted all his life, was a good shot, and was as spry as lots of men half his age. He and I argued as to what was the use of having such high velocity and far-reaching rifles if we didn't make use of them at long range, so we concluded to try them out.

He shot his first bull at 400 yards, shot him through the intestines with one shot, and he never got out of his tracks. On dressing the bull I found that his intestines were literally cut to pieces. That was why he couldn't get away. In a day or two I got him onto another bull at something over 300 yards, he was standing facing us, and the old man killed him with one shot in the sticking place; he never moved out of his tracks until he fell. Such killing power I have never witnessed. I found his heart and lungs were all cut to pieces. Later in the fall I killed two elk and a deer, each of them dropped with one shot. One big bull elk was over 500 yards away; I killed him as easy as if he had only been 50 yards away. Well, that little copper-tipped bullet has been a revelation to me. I have hunted big game over 30 years and always considered the heavy bullet just the right thing, but it is not in it with Ross dynamite bullet.

The Ross rifle is a humane rifle, for it kills and doesn't maim. If it hits any where in the body, you are sure to get your game, at least that has been my experience, and that is what the Ross people claim—that it will anchor any animal hit in the body.

It is a thoroughbred and never disappoints you, for it gets there instantly no

matter how far you are shooting, and it does the work. It speaks for itself. It handles beautifully, and is pleasant to the touch, and will be a joy forever to any true rifleman. I can heartily recommend it to any one who loves to shoot, for it will make you laugh to see the way it slings a bullet, for it gets there instantly, and its killing power is the most wonderful thing I have ever seen. Besides, its extreme accuracy is greater than I can tell you.

Wyoming. JIM McLAUGHLIN.

Springfield Rifles Can Again Be Purchased

The order of the War Department prohibiting the sale of Springfield rifles to rifle clubs, mentioned in the last issue, has been revoked, and these rifles can now be purchased by duly affiliated rifle clubs on the same terms as before that order was promulgated. The order was in effect about one month, and evidently someone heard from the rifle clubs. May not this be an indication as to what riflemen might do, as a body, on such subjects as laws preventing the possession or carrying of firearms, etc?

Gun Club Notes

The shooters of Alliance, Neb., have organized a gun club and are going to try and get the Nebraska State Shoot for 1916. They started with 100 members and will have $600 to offer as prize money if they get the state shoot.

A revised gun club map of the United States just issued by the Du Pont Powder Company, showing the location of towns containing organized clubs, gives the total number of clubs up to November 15, 1914 as 3,221. It is estimated that the average membership of these clubs is fifty, making a total of 161,050 trapshooters belonging to clubs that shoot regularly. The total of all classes is estimated at 400,000, probably more actual participants than can be found in any other American sport.

The Rocky Mountain Interstate Sportsmen's Association will hold its annual shooting tournament in Denver, June 2, 3 and 4, with a prize list of $750. The feature event will be the 100-bird handicap, open to shooters from Wyoming, New Mexico and Colorado, for the Denver Post trophy, a silver loving cup valued at $500. Nelson Franklin of Victor is president, and C. D. Plank of Denver (care Tritch Hardware Co.) is secretary, of the big event.

I am unable to decide on the choice of a rifle for general use on big game in this country and Canada. I thought you might be able to help me out. With the coming of the .256 Newton rifle I have been undecided as to the choice of the Winchester handling the 1906 Springfield cartridges or the .256 Newton. The velocity and energy of the latter is very desirable, but I have not heard how the cartridge acts on big game. The Springfield is undoubtedly one of the best cartridges we have, but the figures of this new rifle look very promising. Would you kindly give your opinion of the merits of these two rifles for general use under all circumstances? What bullet is the best game getter for use in the .30 1906 cartridge, and what is your opinion of the Newton protected point bullets which can be used for this cartridge? I have not had any experience as a big game hunter, and all the knowledge I have of the different rifles is what I get through the columns of the sporting magazines. Every one seems in favor of the small-bore, high-velocity type of sporting arms; the majority do, anyway. —Frank J. Pixley, Grand Rapids, Mich.

Answer.—As to the action of the .256 Newton cartridge on game, this has been upon the market for so short a time that it has not yet received much of a tryout. However we may infer something concerning its action from the action of similar cartridges. The cartridge uses an expanding bullet at 3,100 f. s. velocity. The Ross uses an expanding bullet at 3,050 f. s. velocity. The .22 Savage high power uses an expanding bullet at 2,800 f s., and the Springfield has been used with expanding bullets at 2,700 f. s. All these cartridges, of which the .22, .280 and .30 are long and well known as game killers, develop a complete expansion and great killing power. We see no reason why the .256 Newton should not act in the same manner, since it has substantially the same velocity. If so its killing power should be much the same as the Ross .280 save for the difference in energy due to the difference in bullet weight. Nearly all users of these ultra high velocity rifles are very enthusiastic about their killing qualities, and

there can be but little doubt that they are much in advance of the slower bullets in this regard. The principal objection raised to them is that at times they mushroom too much on the heaviest game, when struck in the thicker parts, and lack penetration somewhat. We understand Mr. Newton is developing some new bullets to meet this situation, but he has not as yet made the designs public. As to the present Newton protected point bullet, Lieutenant Whelen speaks very highly of it, after a thorough trial. He pronounced it very accurate, it seems to expand well, and its energy is readily determined from its velocity. Having good accuracy and ready expansion it should be a good bullet.—Editor.

Do you think that smokeless powder will entirely take the place of black powder, and will the repeating rifles take the place of the single shot rifles entirely? Do you think that the Ballard rifle will ever be placed upon the market again?—Garry Clouse, Wooster, O.

Answer.—The role of a prophet is so difficult we hesitate to assume it. We once laughed at the "flying machine." Smokeless powder will ultimately displace the black whenever it can do the work as well. At the present time it has nearly displaced black powder in shotguns, and in rifles using the powder at pressures of 20,000 pounds per square inch or upward. For the low pressure rim fire cartridges, however, no smokeless powder which will equal the black has yet been produced. This because the smokeless powder requires the high degree of heat only found when the higher pressures are used to burn it properly. Some one may yet come forth with a sufficiently free burning smokeless powder to give good results in the rim fire cartridges. Speed the day, as the greater cleanliness will be most welcome where it is most needed. In this we class "lesmok" and "semi-smokeless" powders among the black powders, as they are in no true sense smokeless powders, either in chemical composition or in results obtained. The Ballard rifles will never again be manufactured, for the two reasons that single shot actions are not sufficiently popular to justify the venture, and the Ballard action has not nearly sufficient strength to permit the use of modern high power cartridges. Both Winchester and Stevens single shot actions are far stronger. The writer's first rifle was a Ballard, purchased twenty-seven years ago. It still stands in the gun case, and we trust it always may. The number of Winchester actions which he has fitted with high power barrels since then number scores, and it was always with regret that he realized that the old veteran and companion of so many years was not sufficiently strong for such promotion.—Editor.

I have a .22 Hi-Power Savage, and want to use the regular .22 caliber rim fire cartridge but am afraid of leading the barrel. Kindly let me know whether it would be safe to use the regular .22 or not.—E. L. Boettcher, Kalama, Wash.

Answer.—Very good results may be obtained by the use of .22 long rifle cartridges in the .22 Savage high power rifle, using the Marble adapters. However, the rifle requires resighting for the long rifles or an allowance must be made in the aim, as the zero is changed, both vertically and horizontally. Also, never use the .22 long rifle after the high power loads, or the high power loads after the long rifle, without thoroughly cleaning the barrel, as such use will lead to trouble.—Editor.

I should like to ask the following questions: Can the shell known as .50-100-450 be used in an '86 model .50-110 Winchester? What is the power of the .50 Eley cartridge? Also is a .33 caliber rifle with ordinary shell subject to metal fouling as is a Ross .280? —Iliff Staples, New Salem, Ind.

Answer.—The .50-100-450 cartridge and the .50-110-300 can both be used in the same rifle. We have no ballistic figures at hand for any of the Eley black powder cartridges of .50 caliber. Their cordite cartridges in this caliber are of high velocity, developing 2,125 feet per second and an energy at the muzzle of 5,007 foot pounds. These are the large elephant rifles using a 3¼-inch shell. The .33 caliber Winchester cartridge will not give trouble from metal fouling.—Editor.

As a constant reader of Outdoor Life I am taking the liberty of asking you a few questions: What is the striking energy of .30 and .35 cartridges used in the Remington pump gun? What is the velocity of each and can you use the .30 Government in it? —Robert Swanton, Olympia, Wash.

Answer.—The striking energy of the .30 Remington rimless autoloading cartridge at the muzzle is 1,540 foot pounds; at 300 yards it is 635 foot pounds. That of the .35 Remington autoloader is 1,776 foot pounds at the muzzle and 640 foot pounds at 300 yards. These are the figures for the 200-grain bullet; with the 170-grain bullet the muzzle energy is 1,695 foot pounds. The velocity of the .30 caliber at the muzzle is 2,020 feet per second, and of the .35 caliber 2,000 f. s. These are the cartridges used in the Remington pump action rifle as well as in the autoloader. The .30 caliber government cartridges cannot be used in these rifles as they are far too large. This cartridge has a muzzle velocity of 2,700 f. s. and a muzzle energy of 2,445 foot pounds, while the energy at 300 yards is 1,392 foot pounds.—Editor.

Will you please tell me where I can purchase an aperture front sight of the Vickers-Maxim type, for the new Savage .22 repeater, to be used with the Lyman tang peep sight?—O. L. Beeson, Connersville, Ind.

Answer.—The sights in question we think can be purchased from the Marble Arms & Tool Company, of Gladstone, Mich.—Editor.

I would like to have your opinion whether the .22 or .25 high power Savage cartridges are suited for use in a country covered with timber or heavy brush. Would the ball deflect or fly to pieces on striking twigs or undergrowth, and would the .303 be better for such hunting?—J. R. Fletcher, Little Rock, Ark.

Answer.—You need not be afraid of deflection of the bullets mentioned through their striking twigs. Much misapprehension seems to exist on this subject. Last spring the writer determined to test this question of deflection somewhat. He erected an ordinary 200-yard target and about 25 yards in front of it erected a screen of woven wire, the wires of which were ¼-inch apart between centers, were about 1/32-inch in diameter and were fastened at the points where they touched by the galvanizing process to which the screen was subjected. This screen was fastened firmly at the edges so the wires were held comparatively taut. This target was then fired on from a distance of 200 yards with a .256 Newton high-power rifle having a muzzle velocity of 3,100 f. s. and a 123-grain bullet with soft point with wire in center, and which would expand as easily as though the wire were not there. The screen blanketed the target, and the distance between, 25 yards, gave opportunity for any deflections to manifest themselves. One shot, which struck in such manner as to cut two of the wires, struck about 10 inches

lower on the target than on the screen. Another, also cutting two holes, dropped about 6 inches. Another of the shots cutting two wires was deflected about 3 inches to the left. One other shot cut two wires and all but one of the others cut one wire each, but none of the others were sensibly deflected. When it requires two wires, each 1/32-inch in diameter, firmly fastened at each end, to deflect a bullet, and then only two material deflections out of four such shots, we need not worry about the twigs which snip off easily.—Editor.

I am writing you for a little information. I have a Stevens 20-gauge gun off which I have rubbed the blue in several places and I would like to know if you have a receipt for bluing a gun that I could do myself here without sending it back to the factory?—T. C. Slayton, Salem, Ore.

Answer.—You cannot successfully re-blue your gun at home. This can be done successfully only at the factory. The bluing is an oxidizing process which requires great care and good facilities to make a successful job. Small parts may be blued at home by heat treatment, but the larger parts cannot be so handled.—Editor.

I would like some information regarding the shortening of a rifle barrel, model '86, .45-90-300 Winchester. The present length of barrel is 26 inches. I wish to shorten same to about 20 inches. Will shortening the barrel affect the accuracy up to 300 yards? What smokeless powder can be used in the .45-90 shell in reloading same with shot, and about how many grains of powder and weight and size of shot would you recommend?—E. L. Wall, Great Falls, Mont.

Answer.—Shortening the barrel will not affect the accuracy further than it slightly reduces the ability to aim correctly by reducing the distance between the sights. There will be a slight falling off in velocity but not much. You can use either Infallible powder or bulk shotgun smokeless with the shot cartridges. We have no data at hand on these loads nor have we had any experience with them. You can use shot only by encasing them in the little wooden jackets sold by the Remington Arms-Union Metallic Cartridge Company of Bridgeport, Conn. The charge of shot is what the jacket will hold. This firm will give you instructions concerning the proper charge.—Editor.

I am taking the liberty of writing you regarding the .30 caliber Luger pistol. Could you give me some ballistics with service load? I have never had the privilege of firing a Luger; does it eject the empty shell with violence, as the Colt, for example, so as to sometimes prevent their easy recovery for reloading, throwing them a considerable distance from the gun? What is your personal opinion of the accuracy of the Luger compared with the Colt officer's model .38 Special? I own one and like it first rate for a target gun only. I own three Colt guns: Officer's model .38 Special, 6-inch barrel, .41 D. A., and .45 S. A. Army—all 6-inch barrels except .45, which is 5½. Have you any record of anybody reloading Luger cartridges with Ideal bullet No. 308244?—L. J. F., Coffeyville, Kan.

Answer.—The Luger pistol in .30 caliber has a 4⅝-inch barrel and uses a 93½-grain bullet, at a muzzle velocity of 1,150 f. s. The 9-mm. Luger has a 4-inch barrel, uses a 124-grain bullet at 1,070 f. s. velocity. It throws the empty shell as far as does the Colt or the other automatic pistols. As to accuracy the United States ordnance office test of the Luger in comparison with some others gave the figures as follows, the shooting being done at 75 feet: The mean deviation of the Luger was 1.3-inch, of the Savage 1.9 inch, of the Colt 2.4-inch, of the Colt revolver 1.9-inch, of the Smith & Wesson revolver 1.6-inch. We know of no one having reloaded the Luger cartridges.—Editor.

I have never been able to find comparisons in Outdoor Life of the Colt and Savage automatic pistols .32 and .38 pocket model. I will very much appreciate any data relating to their power (weight of charge, weight of bullet, muzzle velocity), also their general behavior in actual practice. Is the automatic bolt locking feature of the Savage of any real advantage? Is the muzzle velocity much increased, and also how about the kick and the accuracy of fire? Many claims have been made in the catalogs of the above firms and therefore I would very much like to hear from users of the above arms.—A. G. Senstius, St. Louis, Mo.

Answer.—The Colt and Savage pocket .32 and .38 caliber automatic pistols use the same cartridges, therefore any difference in ballistic results would be attributable to the difference in the locking system, of which you inquire. These two systems were tested by the U. S. Government during the tests of pistols for army use. Since the same ammunition was used in both it would seem that this was as fair a test as could be had. As a result of this test the Colt gave an average velocity of 775 feet per second with a maximum variation of 100 f. s. The Luger gave an average velocity of 809 f. s. and a maximum variation of 26 f. s. The Savage gave an average velocity of 813 f. s. and a maximum variation of 75 f. s. The Colt double action revolver gave an average velocity of 915 f. s. with a maximum variation of 58 f. s. The Smith & Wesson revolver gave an average velocity of 991 f. s. and a maximum variation of 53 f. s. It is important to note that the revolvers used in this test had 5½-inch barrels only. Summarizing, the Savage gave more velocity and with less variation than the Colt. The Luger gave slightly less velocity and far less variation than the Savage, while the revolvers were well ahead of all the automatic pistols in velocity and below all but the Luger in variation. Touching the .32 caliber and .380 caliber cartridges the Savage Arms Company gives the following information as to velocities:

.32 Cal. Savage Automatic Pistol, Model '07.

Ammunition.	Ft. per Sec.
Savage	1,016
Winchester	952
Peters	952
U. M. C.	1,014

.380 Cal. Savage Automatic Pistol, Model '07.

Ammunition.	Ft. per Sec.
Savage	946
Winchester	933
U. M. C.	841
U. S. Cartridge Co.	928

The above velocities are at 50 feet from the muzzle, the pistols having been tested over a chronograph range of 100 feet. The velocity of the .45 caliber pistol tested by the Government was at 25 feet from the muzzle used over a chronograph range of 50 feet. Therefore the .32 and .380 Savage pistols have a greater superiority in velocity than the comparison of the above figures would indicate.—Editor.

I want to get the most powerful gun in existence, for a special purpose; one that has the longest range, accuracy and high killing power. Has the Winchester any more powerful rifles than the Mauser, Haenel-Mannlicher, Mannlicher - Schoenaur, handled by H. Tauscher, 320 Broadway, N. Y., and

will you be kind enough to tell me where I can get a gun manufactured 9 feet long with 1 inch bore or less? Will you please give me what information you can on high-power rifles. How does the U. S. Army gun, the Springfield, compare with above?—D. T. Woodman, Blocksburg, Calif.

Answer.—None of the Winchester rifles are as powerful as the latest Mauser and Mannlicher rifles. Among the more powerful rifles handled in this country are the .333 Jeffery and .404 Jeffery Mausers, sold by Abercrombie & Fitch of New York City. The Newton Arms Co., of Buffalo, N. Y., handle some very powerful sporting rifles, while most of the large English factories are turning out goods in this line. The English and German makers furnish a .600 caliber rifle using a cordite cartridge which is the most powerful hand firearm made. A rifle of the dimensions which you mention could only be made in an ordnance factory, since the ordinary rifling machine will handle nothing longer than 36 inches. The dimensions given by you would call for a one-pounder rapid-fire gun, and for these would suggest that you write Francis Bannerman, of New York City, who handles ordnance, and he may be able to furnish what you wish or put you in touch with the ordnance factories. The Springfield rifle is far less powerful than any of the rifles above mentioned.—Editor.

Would you kindly tell me where I could get the Brayton tubeless telescope sights, and give me any information you may have on the subject, such as price, efficiency, etc.? Could you give me some information also on the rifle telescope issued to the U. S. service expert sharpshooters for use with the New Springfield? Is it adapted to other rifles? How is it mounted; side or top? Is it quickly taken on or off? Is it an efficient instrument? I am intending to order one from our club secretary if the mountings are adaptable to different makes of guns.—Edw. Munro, Coalinga, Calif.

Answer.—The Brayton tubeless telescope sight was made by the Savage Arms Co., of Utica, N. Y. We do not know whether or not they still make them. They consisted of two lenses, or rather half lenses, which folded down next the barrel when not in use. They were used in connection with the ordinary metallic sights. We tested one of them when they first came out, but doubtless due to our not catching the spirit of the thing, were not greatly impressed with it. The telescope issued to the U. S. Army is of the prismatic type, on the same principle as a binocular, and is attached to the left side of the rifle. It is made to fit the receiver of the Springfield and could be adapted to other rifles of the same type. It can be quickly removed and is a very efficient sight. Personally we never liked this sight for two reasons: First, it is mounted on the side, and necessitates holding the sighting eye to the left of the center of the rifle, thus interfering with that close fit between stock of rifle and cheek of rifleman which is so essential to good off-hand work. Second, the axis of the object glass is so far above the axis of the bore that the range within which the bullet is rising up toward the line of vision is much increased. This results in allowances for distances being necessary when shooting at ranges up to 50 to 75 yards to avoid under-shooting. This is embarrassing when attempting to cut off the head of a grouse, squirrel, etc.—Editor.

Kindly let me know whether or not a .45 caliber single-action Army Colt is more accurate with a 7½-inch barred than with one 5½ inches in length, the gun to be used both for target shooting and as a side-arm in the mountains. Is the .45 caliber single-action Army Colt as accurate as the .45 caliber New Service Colt? Again, what is the objection to the use of smokeless powder ammunition in .22 caliber rim fire arms? Will "Lesmok" cartridges give as satisfactory results as smokeless in a Bekeart model .22 S. & W.? —J. Diehl Schoeller, Sacramento, Calif.

Answer.—So far as the delivery of the bullet is concerned, the 5½-inch barrel is equally as accurate as the 7½-inch. However, the greater distance between the sights of the 7½-inch barrel enables you to aim it more accurately and gives better shooting. The 7½-inch barrel will also give greater velocity than will the 5½-inch, due to the bullet being longer subjected to the pressure of the powder gases. There is no difference in accuracy between the single-action and the New Service models, as far as the revolver is concerned. Nevertheless there is quite a difference in the shape of the grips of the two guns, and we would recommend the one which most nearly fits your hand. Try both models, side by side, by first making sure they are empty; then cock, sight upon some near-by object and pull. Notice carefully which one comes off with the least disturbance of the aim in pulling off, and this is the gun for you. Do not rest upon a single trial, but repeat a number of times until you can clearly distinguish which fits you the better. The trouble with the use of smokeless powder in rim fire .22 cartridges is due to the fact that smokeless powder requires a considerable degree of heat in order to burn properly. The heat developed in burning varies with the pressures developed, the higher the pressure the greater the heat developed. The rim fire shells will not stand any but the lowest pressure—too low for the smokeless powder to burn properly. To remedy this the amount of fulminate in the primer is largely increased to give additional heat and assist in the burning. This makes the priming charge a considerable portion of the propellant and since this priming charge cannot be easily regulated variations in pressure occur. Also this large priming charge leaves an acrid residue which tends to rust the barrels, since it is not sufficiently mingled with the powder gases to be carried out of the barrel. Lesmok is not a smokeless powder and gives the best of results wherever used.—Editor.

Will you please answer these questions in the Arms and Ammunition Department: (1) Is the proof test to which the Government subjects the .30 caliber 1906 Springfield rifle a chamber pressure of 70,000 pounds per square inch, and did the 1895 Winchester rifle stand that test successfully? (2) What is the proof test of the Ross, and what is the normal pressure? Also, what is the chamber pressure developed by the .30 '06 220-grain? (3) As to sectional density: I get 2,013 for the 150-grain .30 '06 bullet, and 2,953 for the 220-grain, taking a diameter of .308"; is this correct? (4) Will either the Winchester or the Mauser .30 '06 rifle handle the 172 and 180-grain spitzer bullet cartridges through the magazine without trouble? (5) Can cartridges (.30 caliber, '06) be obtained at present, loaded with Mr. Newton's patent spitzers, and, if so, in what weights?—Floyd Dumond, Minot, S. D.

Answer.—(1) We are unable to say exactly what is the proof test to which the factory subjects the Springfield rifles. Our impression is it is about 65,000 pounds per square inch. The board inspecting the model 1895 Winchester rifle subjected it to the test of firing three cartridges, each developing a pressure of 70,000 pounds per square inch, and the rifle met this test suc-

cessfully. However, this was done with the Krag cartridge, which imposes slightly less back thrust on the action than does the 1906 Springfield cartridge, owing to the slightly smaller diameter of the shell at the base. Also the Krag shell, having a flange head, is stronger in resisting the stretching of the head around the primer pocket than is the Springfield, due to its greater diameter of head. This is the weakest spot in the Springfield shell or rifle. (2) As to the proof test of the Ross, we are relegated to the statements of Mr. Crossman, the only duly and regularly appointed sky pilot for that firm. You may give him such credit as you see fit. He has repeatedly stated it and usually differently each time. Running through some old files we first found it was 70,000 pounds, and then that it was 63,000 pounds. Then we quit. The service pressure is stated by the U. S. Cartridge Co., which loads the ammunition, to be 54,000 pounds. The chamber pressure of the Springfield rifle with 220-grain bullet, as loaded by the government, was 44,000 pounds, using W. A. powder and developing 2,200 f. s. velocity. We have no data on the loadings of private firms. (3) As to figures on sectional density, hurriedly making the computation we obtain 2.010 and 2,949 respectively, the difference due in all probability to dropping decimals. (4) The rifles mentioned will handle the spitzer cartridges mentioned without difficulty. (5) They can be furnished by the Newton Arms Co., loaded to special order, with 150-grain or 170-grain bullets. The 170-grain weight is far the best for all purposes.—Editor.

I will greatly appreciate it if you will tell me the best and quickest way to thoroughly clean and dry .38 S. & W. Special revolver shells. I expect to do a great deal of target shooting this summer and to reduce expense want to reload the shells. Would be glad to receive any other information which you think might be of interest.—A. H. Chapple, St. Joseph, Mo.

Answer.—Decap the shells as soon as possible after firing. Place them in a dish of water to which washing soda has been added and boil for a few minutes. Rinse carefully until all traces of the soda are removed, and dry them. To dry them it is well to rinse them for the last time in boiling water, flirt off all the water possible, and the heat in the shells will materially assist the drying. When rinsed they may be placed muzzle down in an oven or over a cooking range and quickly dried. A convenient method of handling them is to obtain some wire netting of such size mesh as to permit the shells to be placed through the meshes and yet be held by the heads. By this method they may be handled without difficuty muzzles down. It is important that they be dried quite quickly, yet be not subjected to sufficient heat to anneal them. Note that the primer pockets are dry before putting away. Incidentally, when using any of the dense nitro powders we never clean our shells and consider it a useless operation. When black powder or bulk smokeless powder is used they should be cleaned, if not intended for immediate use.—Editor.

I would feel greatly indebted to you if you would please answer the following questions: Where and how can I procure a Springfield rifle, and what will the cost be? Does the Government make the same gun in what is known as the "star" brand? If so, why? Is there any difference between this and the regular gun issued to the National Guard? Who remodels the Springfield to a sporting arm? What gunsmith would be likely to do the best work, and at what cost? Could the bolt action rifle be made for one who is left-handed? I mean by that the bolt falling on the left-hand side of the arm. I realize that there would be a very slight demand for such a gun, but to one who is left-handed it would certainly add greatly to the value of the arm.—Paul E. Hilliard, Woodlawn, Pa.

Answer.—By affiliating with any rifle club which is affiliated with the National Rifle Association, you can purchase one of the rifles through your club secretary, or you may affiliate directly with the Association. To do this, write Lieutenant Albert S. Jones, Secretary N. R. A., Washington, D. C. The cost is $12.50 with packing and express charges added. For an extra charge of 69 cents the arsenal people will select a rifle with a uniformly bored and rifled barrel, using for this purpose a star gauge. Rifles thus verified are known as "star gauged." They do not differ from the ordinary rifle except that you are sure the bore is of not only proper but uniform size. The barrel not so tested may be just as good, and it may not. These rifles are exactly the same as used by the National Guard. There are a number of gunsmiths who remodel these rifles into sporting models. Ludwig Wundhammer of Los Angeles, Calif., and Fred Adolph of Genoa, N. Y., make a specialty of it. The cost varies from $20 up, according to the quality of the stock. The Newton Arms Co., of Buffalo, N. Y., advertise stocks of sporting model for this purpose. It is impossible to build a bolt action rifle with the bolt on the left side without making both bolt and receiver by hand and this would cost $500 or more.—Editor.

What is the length of barrel of the U. S. Springfield rifle and carbine? Can a civilian obtain one? If so, where, and price? Can a gun of the Springfield model be obtained in smaller caliber, viz., .25-20 or .25-35? Can a gun be obtained combining the features of the roller magazine of the Savage and the outside hammer and action of the Winchester or Marlin? What would be your idea of such a gun for strength, smoothness of action and freedom from jamming? What is the velocity, penetration, range and size of load of the .38 Colt automatic, Military model, in comparison with the Luger and the .38 single-action Colt?—G. H. Smith, Visalia, Calif.

Answer.—As to purchasing a Springfield rifle, see answer to Paul E. Hilliard in this issue. The rifle and carbine are the same, and the barrel length is 24 inches. This rifle can be had in the gallery practice model, which is .22 caliber, using .22 short cartridges in an adapter, but in no other calibers. We know of no hammer rifle using the revolving magazine. Our opinion of the revolving magazine is that it is expensive to make, it occupies space in the rifle exactly where grasped by the hand, thus thickening it at this point, and gives no better results than the Mauser type of box magazine. The magazine must be wide enough to accommodate the full diameter of two cartridges and also the diameter of the central shaft of the magazine. The Mauser magazine, of the staggered type, needs only the width of about 1¾ the cartridge diameter and the depth of three cartridge diameters to hold the same number of cartridges. Therefore it saves both bulk and weight and sacrifices nothing but some useless mechanism. Personally we prefer the hammerless type of rifle, but this is a matter of taste. The velocity, range and size of load of the .38 Colt automatic is inferior to that of the Luger and Colt single action. As to penetration, the full mantled bullets would exceed the lead bullets, but with the same type of bullets the Colt automatic would be inferior. —Editor.

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Our bear bill imposed no hardships upon any class of man or beast. In Colorado, where the ranchmen set up an objection on account of the commotion that they thought would be created on their stock ranges in the fall, due to bear hunting, we were willing to extend the close season so as to include the month of September, in order that stock ranging in the higher elevations frequented by bears would have no chance of being disturbed by hunters or hunting parties during that month. But our Senate Committee on Game delegated to itself the right to know what was needed better than the Senate did, and killed the bill in committee after it had passed the House by a vote of 41 to 5. If it had been allowed to go to a vote of the Senate we feel confident that it would have passed.

In our April number we recorded the progress of the bill in Montana and Wyoming, but since then we have learned of its failure also in Washington. In a letter from N. D. Moser, president of the Washington Game Protective and Propagation Association, which organization gave its unanimous support to the bill, he says: "Our bear bill fell by the wayside in the Legislature at the last minute. Too much politics. The game code was shot all to pieces by one man trying to force deer-hounding through. Hope you had better luck in Colorado."

The good news of California's passage of the bill through the Senate (it had previ outly passed the House by a vote of 70 t 3), comes to us just as we are going t press with this number. This is certainl gratifying news, and it will be receive with much satisfaction by the sportsme of America. To Dr. A. P. Deacon and James Mazzini of Weed, and to Assembly-man H. B. Ream of Sisson the sportsmen owe a vote of thanks, for their persistent work in its behalf. Mr. Mazzini, in writ ing us from Sacramento, to which place he journeyed in order to add his influence to the measure, writes: "I am confident that California will be one of the first states to stop the wasteful slaughter of our bears, notwithstanding the 'howls' from the sheep men, who have done more to destroy all kinds of game and game haunts than any class of people on earth."

The fact that this bill passed the House in California and Colorado by such tremendous majorities should (and will) encourage the defenders of game protection in America. We must gather together our forces and wage a campaign two years hence that will win in every big game state. With such men as Hornaday, Sheldon, Merriam, and other wild life conservationists back of our efforts, coupled with the rank and file of our citizens and sportsmen, we should record a big victory in 1916-17.

Bears are most assuredly on the verge of extinction if something is not done to protect them; and it is up to us—the sportsmen of America—to see to it—first, that proper laws are enacted for their protection; and, secondly, that those laws are enforced after they are made. If we fail in our duty the grandest game animal of the West will surely pass away.

We shall always remember the good state of California for the part she took in this crusade—the first state in the Union to adopt a sane measure for the protection of the most abused species of our disappearing game. The bear is now more justly entitled than ever to be hoisted as her emblem, and we hope that all eyes will turn hereafter to the splendid example she has set.

The bill, as passed by California, closes the season on bears from April 1 to October 1, limits the number to two and forbids the use of the steel trap. We shall publish a full text of the measure in our next number.

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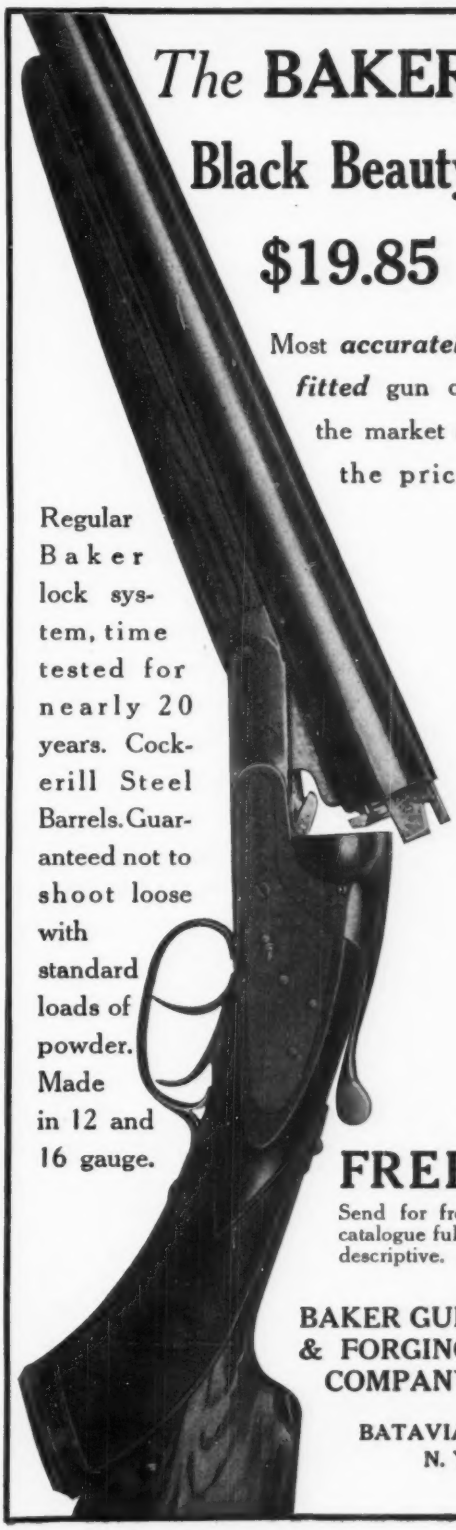

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Trade Literature

The Jewel Electric Co., Dept. O. D., 732 South Michigan Ave., Chicago, have sent us a catalog describing and illustrating their Jewel detachable electric rowboat motor, which they will be glad to send to anyone on request.

One of the most beautiful gun catalogs ever received at our desk is the 1915 book gotten out by the Ithaca Gun Co., Box 10, Ithaca, N. Y. The front cover is a splendidly executed design by that king of the brush, Lynn Bogue Hunt, showing a wild turkey, in full plumage, pursued by a fox. Other scenes on the inside are by the celebrated artist Louis Agassiz Fuertes. The best part of this announcement is yet to come, for it relates to the fact that the Ithaca company is going to send this catalog entirely free to all Outdoor Life readers who apply for it.

The Evinrude Motor Co., 108 Evinrude block, Milwaukee, Wis., builders of detachable rowboat and canoe motors, are distributing some very attractive poster stamps, illustrating the various uses to which their motors can be put for boat riding as a means of sport and pleasure.

The W. J. Jamison Co., Dept. D., 736 So. California Ave., Chicago, has sent its 1915 catalog of fishing tackle for black bass, muskellunge, pickerel, pike and trout fishing which is being sent to all fishermen on request. The book is composed of 38 pages of interesting matter.

Dan Kidney & Son, West De Pere, Wis., have issued a beautiful catalog covering their detachable motors, launches, sail boats, etc., that they are sending out gratuitously.

Marble's new catalog of hunting, fishing and outing specialties is now off the press, and will be sent to anyone writing to the Marble Arms & Mfg. Co., 571 Delta Ave., Gladstone, Mich.

New Sporting Accessories

The L. F. Schilling Co., Seventh street, St. Joseph, Mo., has invented a camp bed that can be attached to a Ford or a Maxwell runabout in a way that does not in any way detract from the appearance of the car while on the road. The bedding folds up and goes in a receptacle built back of the seat, as per illustrations shown in the advertising that the Schilling Co. is running in this number.

Two new arms in the market are the Stevens .410 and 44-gauge single barrel shotguns, the .410 gauge being furnished with 26 or 30-inch barrel, and the 44 with 26-inch barrel only. These guns are extra light,

weighing only about 4½ lbs. each, the light weight being secured by skillful design and by making all parts of a size proportionate to the small bore. They have case-hardened frame, walnut stock and rubber butt plate; the barrel and lug are in one piece forged from a solid bar of steel.

One of the handiest tackle boxes we have seen this season is the new one which is put out by the Redifor Rod & Reel Co., Warren, Ohio. The partitions are interchangeable, you can leave top closed in boat and pull out drawer to change bait; top drawer has cover; pocket size; large space below for flybook, junk, frogs, etc.

The new model 30, 20-gauge Marlin shotgun, is out of the factory and comprises some features of interest to sportsmen. This light weight gun is built especially for quick handling in upland shooting—for snipe, partridge, quail, woodcock, squirrels, rabbits, etc.; weight 5 7/8 lbs.; 5 shots; take-

down; matted barrel; handles 2¾-in. shells as well as the ordinary 2½-in.; optional length of barrel. The gun has weight enough to avoid unpleasant kick from recoil, yet is so light that it can be carried all day without inconvenience.

Marble's new Woodcraft hunting knife has just been placed on the market, and we are pleased to note that it comes very near being

an ideal knife for the all-around big game man. The blade is 4½ in.; handle, 3¾ in., weight, 5 oz. This knife is light in weight, short in size, sells for $1.50, and has more desirable features for general hunting use than any knife we have seen in a long time. Circulars by request from the Marble Co., 571 Delta Ave., Gladstone, Mich.

Statement

Statement of the ownership, management, etc., of Outdoor Life, published monthly at Denver, Colorado, required by the Act of August 24, 1912; Editor, J. A. McGuire, Denver, Colorado; managing editor, J. A. McGuire, Denver, Colorado; business manager, M. E. McCumber, Denver, Colorado; publisher, Outdoor Life Pub. Co., Denver, Colorado;.

"Owners—(if a corporation, give its name and the names and addresses of stocholders holding 1 per cent or more of total amount of stock) the Outdoor Life Publishing Co. J. A. McGuire, only stockholder owning 1 per cent or more of total amount of stock.

Known bondholders, mortgagees and other security holders, holding 1 per cent or more of total amount of bonds, mortgages or other securities; None.

(Signed) J. A. McGUIRE,
Editor and Owner.

Sworn to and subscribed before me this 11th day of March, 1915.

(Seal) SIMON J. HELLER,
Notary Public.

(My commission expires Feb. 29, 1916.)